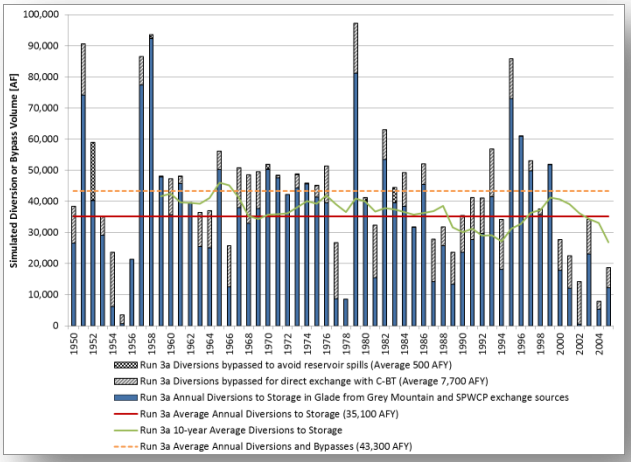
FINAL DRAFT REPORT

Northern Integrated Supply Project
Supplemental Draft Environmental Impact Statement
Operations Plan Report



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Acronyms

AF	acre-feet
AFM	acre-feet per month
AFY	acre-feet per year
APOD	alternate points of diversion
C-BT	Colorado-Big Thompson
cfs	cubic feet per second
CLPWUA	Cache la Poudre Water Users Association
Corps	U.S. Army Corps of Engineers
CPW	Colorado Parks and Wildlife
CTP	Common Technical Platform
CWA	Clean Water Act
CWCB	Colorado Water Conservation Board
CWCWD	Central Weld County Water District
DEIS	Draft Environmental Impact Statement
District	Northern Colorado Water Conservancy District
DWR	Division of Water Resources
EIS	Environmental Impact Statement
EOM	end-of-month
FCLWD	Fort Collins-Loveland Water District
FEIS	Final Environmental Impact Statement
HSWSPs	Halligan-Seaman Water Supply Projects
IWSA	interruptible water supply agreement
IY	irrigation year
Larimer Weld	Larimer Weld Irrigation Canal
LHWD	Left Hand Water District
LRE	Leonard Rice Engineers
MCQWD	Morgan County Quality Water District
NEPA	National Environmental Policy Act
New Cache	New Cache la Poudre Irrigating Canal
NISP	Northern Integrated Supply Project
PBN	Poudre Basin Network
Poudre	Cache la Poudre
PVC	Poudre Valley Canal
PVP	Poudre Valley Pipeline
Reclamation	Bureau of Reclamation
RFFA	Reasonably Foreseeable Future Actions
ROD	Record of Decision
SDEIS	Supplemental Draft Environmental Impact Statement
SEO	State Engineers Office
SPDSS	South Platte Decision Support System
SPWCP	South Platte Water Conservation Project
SWSP	Southern Water Supply Pipeline
USGS	U.S. Geological Survey
WCR	Weld County Road
WSEL	water surface elevation

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Section 1
Introduction

The U.S. Army Corps of Engineers (Corps) is conducting a review of the environmental effects of the proposed Northern Integrated Supply Project (NISP) in compliance with the National Environmental Policy Act (NEPA). The Northern Colorado Water Conservancy District (District) is the Applicant for NISP, acting on behalf of 15 Participant municipalities and rural domestic water providers in northern Colorado. A Draft Environmental Impact Statement (DEIS) for the project was published in April 2008. In response to the public and cooperating agency comments received on the DEIS, the Corps is now preparing a Supplemental Draft Environmental Impact Statement (SDEIS) to provide additional analysis of resource impacts.

The purpose of NISP is to provide 40,000 acre-feet per year (AFY) of reliable new firm yield for the Participant entities, as shown in **Table 1.1** below.

Table 1.1. NISP Participant Firm Yield Requests (Harvey Economics 2011)

NISP Participant	NISP Firm Yield Request (AFY)
Central Weld County Water District (CWCWD)	3,500
City of Dacono	1,000
Town of Eaton	1,300
Town of Erie	6,500
City of Evans	1,600
Town of Firestone	1,300
Fort Collins-Loveland Water District (FCLWD)	3,000
City of Fort Lupton	3,000
City of Fort Morgan	3,600
Town of Frederick	2,600
City of Lafayette	1,800
Left Hand Water District (LHWD)	4,900
Morgan County Quality Water District (MCQWD)	1,300
Town of Severance	1,300
Town of Windsor	3,300
TOTAL	**40,000**

For the purpose of this NEPA review, the project demand was modeled at 100 percent (40,000 AFY) in all years of the irrigation year (IY) 1950-2005 study period, plus 5 percent (2,000 AFY) to account for system losses during delivery and storage (see Section 7.4.1.1 of the *CTP Hydrologic Modeling Report* (CDM Smith and DiNatale Water Consultants 2013). Under actual NISP operations, the 40,000 AFY firm yield deliveries to Participants would be calculated as a 10-year running average and may fluctuate above and below the average from year-to-year as a result of annual variability in precipitation, the Participants' demands, and other factors[1].

[1] The modeled demands do not explicitly account for the 3,600 AFY proposed to be made available for flow augmentation under Alternative 2 (see Section 8.1). The water released for flow augmentation is proposed to be recaptured and reused by NISP and would not increase overall project demands.

The objective of this technical report is to document the proposed plan of operations for NISP; in particular the reservoir operations, exchanges, and deliveries to the project Participants that occur once water is diverted from the Cache la Poudre (Poudre) River and the South Platte River. It was prepared by third-party consultant CDM Smith in collaboration with the Applicant (the District).

1.1 Presentation

This technical report is intended to provide a reasonable depiction of a proposed plan of operations for NISP based on the best information that is currently available. It is recognized, however, that specific aspects of the project description and project operations may differ from those portrayed herein. The NEPA analysis and subsequent permitting, if a permit is issued, are intended to allow flexibility for future adjustments that may occur in the identity of NISP Participants and their respective contract rights, and in the mechanisms for delivery of NISP water, provided those changes do not result in substantially different impacts than those analyzed in the Final Environmental Impact Statement (FEIS). In accordance with 40 CFR 1502.9(c)(1), the Corps will prepare supplemental NEPA documentation if: (i) the agency makes substantial changes in the proposed action that are relevant to environmental concerns; or (ii) there are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts.

Estimates of operational flows for the NISP action alternatives are presented in this technical report as monthly average flows volumetrically in units of acre-feet (AF) or acre-feet per month (AFM). Unless otherwise noted, monthly average values are calculated based on 56 years of simulated data for the NISP study period encompassing IY 1950-2005.

Data used for these calculations includes the output of the Common Technical Platform (CTP) monthly modeling tools developed for NISP and the Halligan-Seaman Water Supply Projects (HSWSPs) Environmental Impact Statements (EISs). The hydrologic modeling is documented in the *CTP Hydrologic Modeling Report* (CDM Smith and DiNatale Water Consultants 2013), with Section 7 describing the modeling of the NISP alternatives. **Table 1.2** identifies the CTP and NISP model runs used to generate the data presented in this and other NISP Supplemental Draft EIS reports.

Table 1.2. CTP and NISP Alternatives Model Runs

NISP Alternative	Model Run	Description
—	CTP Run 1	2010 current conditions hydrology
—	CTP Run 2	2050 future conditions hydrology
2	NISP Run 3a	Glade Reservoir and the South Platte Water Conservation Project (SPWCP), with current conditions hydrology
2	NISP Run 4a	Glade Reservoir and the SPWCP, with future conditions hydrology
3	NISP Run 3b1	Cactus Hill Reservoir, Poudre Valley Canal (PVC) diversion, and the SPWCP, with current conditions hydrology
3	NISP Run 4b1	Cactus Hill Reservoir, PVC diversion and the SPWCP, with future conditions hydrology
4	NISP Run 3b2	Cactus Hill Reservoir, multiple diversion locations, and the SPWCP, with current conditions hydrology
4	NISP Run 4b2	Cactus Hill Reservoir, multiple diversion locations, and the SPWCP, with future conditions hydrology

As defined for this study, "current conditions" hydrology (CTP Run 1) uses 1950 to 2005 monthly naturalized streamflows with 2010 demands, infrastructure, and operations to estimate 56 years of Poudre River streamflows under a "current conditions" scenario without the proposed NISP and HSWSPs, Reasonably Foreseeable Future Actions (RFFAs) that are independent of NISP and the HSWSPs, or any other future conditions. "Future conditions" hydrology (CTP Run 2), as defined for the NISP and HSWSPs EIS analyses, uses 1950 to 2005 monthly naturalized streamflows with projected 2050 demands (full or partial, depending on the entity), infrastructure, and operations (including RFFAs that are independent of the proposed NISP and HSWSPs) to estimate 56 years of Poudre River streamflows under a "future conditions" scenario without the proposed NISP and HSWSPs. More details on these hydrologic scenarios are presented in Section 1.2 of the *CTP Hydrologic Modeling Report* (CDM Smith and DiNatale Water Consultants 2013) and Section 3.2 of the *NISP SDEIS Water Resources Technical Report* (CDM Smith 2014).

NISP operations and infrastructure were simulated using the Poudre Basin Network (PBN) component of the CTP model sequence. More specifically, most of the monthly model results presented in this report are based on the fourth iteration of the PBN (known as the "PBNc" iteration, following PBNa1, PBNa2, and PBNb) in the model runs simulating individual NISP alternatives with 2010 current conditions hydrology (Run Series 3) and with 2050 future conditions hydrology (Run Series 4). Operations under modeled scenarios simulating the cumulative effects of NISP with the HSWSPs Proposed Actions (Run Series 5) are not presented herein. The cumulative effects model runs are also based on 2050 future conditions hydrology, and model results show that NISP operations would not vary substantially from those estimated based on Run Series 4. Modeled diversions from the Poudre River under the No Action Alternative (Alternative 1, modeled in NISP Run 9a) are presented in Section 1.3.1.2 of the *NISP SDEIS Water Resources Technical Report* (CDM Smith 2014). Estimated impacts to streamflows for all NISP alternatives are documented in the water resources report as well.

In addition to the CTP model output, some operational flows were estimated through post-processing of CTP monthly simulation results using spreadsheets developed by the District and modified by CDM Smith to provide specific outputs such as the proposed exchange between NISP and Horsetooth Reservoir under certain project alternative scenarios. Operational flows presented in this report include, but are not limited to, the following:

- Proposed NISP diversions from the Cache la Poudre and South Platte Rivers
- Estimated storage inflows and operations of three proposed reservoirs (Glade Reservoir, Cactus Hill Reservoir, and Galeton Reservoir)
- Estimated releases from Glade Reservoir to the Poudre River as part of proposed exchanges to deliver NISP water to project Participants under certain alternative options and other operations
- Estimated releases from Glade Reservoir to Horsetooth Reservoir as part of proposed exchanges to deliver NISP water to project Participants under certain alternative options and other operations
- Releases from Carter Lake to deliver water to NISP Participants
- Releases from Galeton Reservoir to deliver water to the Larimer Weld and New Cache irrigation systems as part of exchanges on direct flow and reservoir storage water rights

In addition, the proposed flow augmentation program for Alternative 2 is described qualitatively and quantitatively in Section 8.1.

Figure 1.1 identifies the locations of the existing and proposed reservoirs proposed to be used for NISP operations. The reader should note that NISP operations as described in this report are based on the best available information at this stage of the NEPA process. Discussions and negotiations with the Bureau of Reclamation (Reclamation) and other entities are ongoing regarding the use by NISP of existing East Slope Colorado-Big Thompson (C-BT) Project infrastructure. Any use of the existing East Slope C-BT Project infrastructure owned by the United States and used by NISP would be subject to a contract with Reclamation. As such, the descriptions and analyses herein are subject to change as project details for NISP are finalized.

1.2 Organization

This technical report is organized to provide the reader with a thorough overview of proposed NISP infrastructure and operational activities. **Section 2** describes each of the three action alternatives, including the Reclamation Contract Option and Reclamation No Contract Option proposed to facilitate deliveries of NISP water to the project Participants under one alternative. **Section 3** describes the proposed diversion structures, reservoirs, pipelines, and other infrastructure associated with Alternative 2; **Section 4** provides the same for Alternatives 3 and 4. Much of the information in Sections 3 and 4 describing proposed NISP infrastructure components is based on a series of technical memoranda prepared by GEI Consultants and Integra Engineering between 2005 and 2010. Key infrastructure components will be detailed in Section 3 (Alternative 2, including interaction with C-BT infrastructure and operations) and Section 4 (Alternatives 3 and 4). **Section 5** summarizes the mechanisms of delivery to the NISP Participants and provides estimated average monthly flows at various points in the distribution system. **Section 6** focuses on the proposed SPWCP exchanges, providing average monthly estimates of NISP diversions and releases associated with these exchanges. **Section 7** describes several issues of operational flexibility for NISP, **Section 8** describes operations proposed to benefit streamflows, and **Section 9** is a list of reference documents utilized in the development of this technical report.

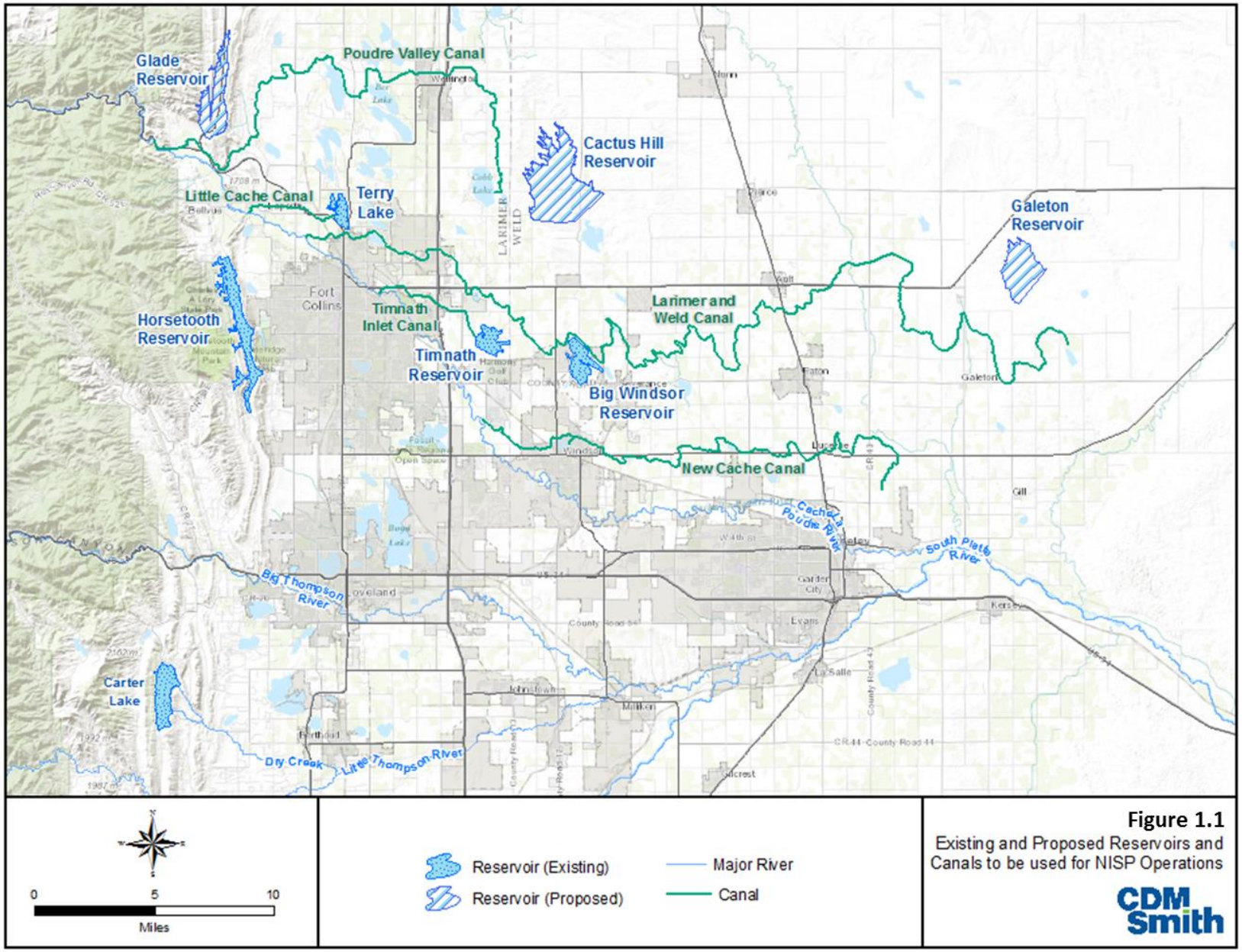

Figure 1.1
Existing and Proposed Reservoirs and Canals to be used for NISP Operations

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Section 2

NISP Action Alternatives

The Corps is evaluating three action alternatives (Alternatives 2 through 4) for NISP, described generally in the following sections. Each action alternative would require the issuance of a Section 404 permit in order to be constructed. More specific operational details are described in subsequent sections. Modeling of the NISP action alternatives was documented in Section 7 of the *CTP Hydrologic Modeling Report* (CDM Smith and DiNatale Water Consultants 2013). Effects on streamflow as a result of proposed project operations are documented in Sections 4 through 8 of the *NISP SDEIS Water Resources Technical Report* (CDM Smith 2014).

Alternative 1, the NISP No Action Alternative, was defined by MWH (2010) on behalf of the District and the NISP Participants. The No Action Alternative considers what the NISP Participants would do to meet their water supply needs in the absence of NISP[2]. The modeling of Alternative 1 and associated effects analyses were addressed in other documentation prepared for the NISP SDEIS (CDM Smith 2013, CDM Smith and DiNatale Water Consultants 2013, CDM Smith 2014).

2.1 Alternative 2 – Glade Reservoir and the South Platte Water Conservation Project

Alternative 2 is the Applicant's Preferred Alternative for NISP, consisting of the proposed Glade Reservoir and the proposed SPWCP. Deliveries of water to the project Participants would be facilitated either by exchange through existing C-BT Project infrastructure or direct delivery through new and existing pipelines. As described in Section 7 of the *CTP Hydrologic Modeling Report* (CDM Smith and DiNatale Water Consultants 2013), Alternative 2 was simulated in NISP Run 3a (with 2010 current conditions hydrology) and NISP Run 4a (with 2050 future conditions hydrology). The components of Alternative 2 are described in the following sections.

[2] The term "no action alternative" does not imply that nothing is to be done or that no new water supply infrastructure will be built; rather, it identifies whether an alternative can be developed that does not require a Corps Clean Water Act (CWA) Section 404 permit (e.g., does not involve the discharge of dredge or fill material into waters of the Unites States) or what is likely to happen if the Corps denies a permit for any action alternative. This can include options that are beyond the control of the Applicant (the District), which in this case involves the 15 water providers pursuing actions on their own without the District.

2.1.1 Poudre Basin Diversion and Storage

Alternative 2 (see **Figure 2.1**) includes the construction of the proposed Glade Reservoir (170,000 AF active storage capacity) as the primary storage facility. This reservoir would be off-channel and would inundate the area known as the Hook and Moore Glade—including 5 miles of U.S. Highway 287 and a segment of the Munroe Canal—near Ted's Place northwest of Fort Collins. The primary Poudre River point of diversion for Alternative 2 would be at the existing PVC headgate, which would be rebuilt to accommodate NISP diversions. The canal itself would be enlarged for a distance (see Section 3.1.1.1 for specific details) extending to the Glade Forebay (approximately 2,000 AF of temporary storage capacity [GEI 2006a]), where a pumping station would deliver water into Glade Reservoir. In addition, Alternative 2 would be operated to include flow augmentation releases to maintain and improve Poudre River streamflows through Fort Collins, which is described in Section 8.1.

2.1.2 South Platte Water Conservation Project

The second major component of the Applicant's Preferred Alternative is the construction and operation of the SPWCP. The principal feature of the SPWCP is the proposed Galeton Reservoir (45,624 AF active storage capacity), which would be located on the plains near the town of Galeton, northeast of Greeley. Galeton Reservoir would be supplied by diversions from the South Platte River just downstream of the confluence of the Poudre River and South Platte River, between Greeley and Kersey. Diversions from the South Platte River would enter a forebay reservoir (formally decreed as the SPWCP Pumping Station Forebay Reservoir), from which water would be delivered to Galeton Reservoir by way of the SPWCP Pumping Station and Pipeline (see Section 3.1.2).

Water would be released from Galeton Reservoir to the Larimer Weld Irrigation Canal (Larimer Weld) and the New Cache la Poudre Irrigating Canal (New Cache) through a system of pipelines. This water would be used as a source of substitution for an exchange of water historically diverted by the irrigation companies. The exchanges would be operated when Larimer Weld and/or New Cache are diverting water for direct irrigation or to storage.

If either Larimer Weld or New Cache direct flow diversions were in priority at the same time as the SPWCP South Platte River diversion, SPWCP water might also be pumped directly to the canals. This approach to SPWCP operation would bypass storage in Galeton Reservoir and minimize the project's pumping costs. The direct pumping operation is not anticipated to happen frequently, but the concurrence of the Poudre exchanges and South Platte diversion being in priority can happen under certain flow conditions. There would be no difference in streamflow effects if the water diverted from the South Platte River was routed directly to the canals, or stored in Galeton prior to delivery.

NISP would also substitute Galeton Reservoir and/or South Platte River water in exchange for water in three existing reservoirs that are affiliated with the Larimer Weld and New Cache companies: Terry Lake, Windsor Reservoir (a.k.a. Big Windsor), and Timnath Reservoir. Each of these reservoirs stores water that is subsequently released to either Larimer Weld (Terry Lake) or New Cache (Big Windsor and Timnath) for irrigation. Big Windsor Reservoir is owned by the Windsor Reservoir and Canal Company and filled by the Larimer Weld Irrigation Canal, but due to its location on the downhill side of the canal, primarily releases stored water to New Cache under an existing exchange.

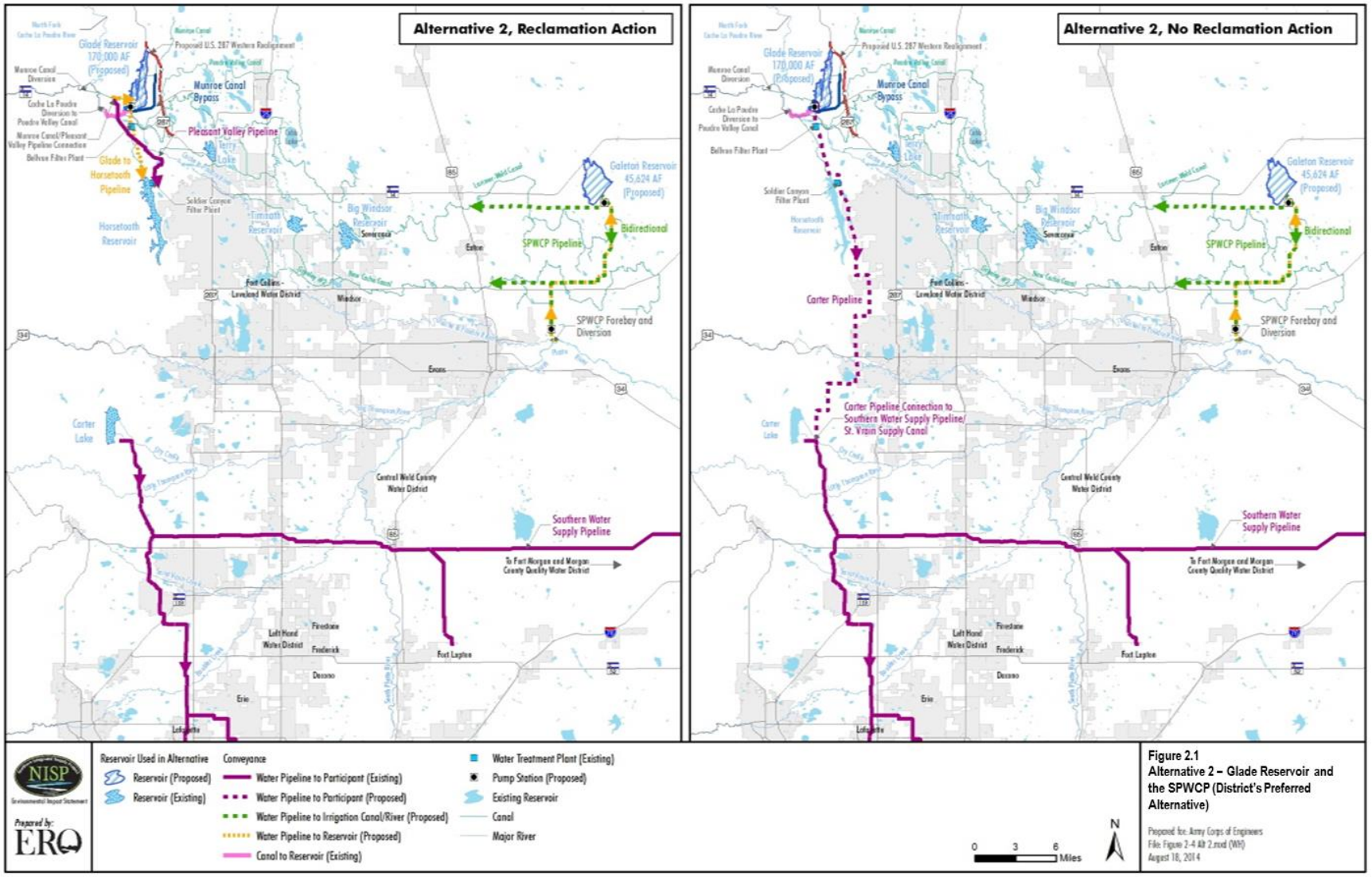

Figure 2.1
Alternative 2 – Glade Reservoir and the SPWCP (District's Preferred Alternative)

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Under typical operation of the proposed reservoir exchanges, Galeton Reservoir would make releases to Larimer Weld or New Cache when the ditch systems make storage releases to meet irrigation demands. Accounting for these Galeton releases would be maintained, and NISP would make equivalent diversions at the PVC when the appropriate reservoir water rights are in priority later in the year, or during following years. The Water District 3 Water Commissioner would administer the actual river exchanges, and the District would be responsible for the accounting with the ditch companies.

2.1.3 Bureau of Reclamation Contract and No Contract Options

For Alternative 2 only, the District proposes to facilitate deliveries of water to most of the NISP Participants by entering into an excess capacity contract with Reclamation for carriage of NISP water through the existing East Slope facilities of the C-BT Project. As a result, there are two options for making deliveries of NISP water to the project Participants with and without a Reclamation exchange contract.

Under the Reclamation Contract Option, 10 out of 15 NISP Participants would take an average annual NISP delivery of 29,500 AFY by exchange through C-BT Project facilities. Under the Reclamation No Contract Option, all NISP Participants would take deliveries directly from Glade Reservoir through existing or new pipeline facilities, or through releases to the Poudre River. Both options are feasible. After the FEIS is issued, Reclamation will prepare a Record of Decision (ROD) that will disclose Reclamation's decisions regarding contract issuance and any other Reclamation actions.

2.1.3.1 Reclamation Contract Option

The Reclamation Contract Option is a part of the District's Preferred Alternative (Alternative 2) and involves securing an excess capacity contract from Reclamation to facilitate delivery of NISP water through existing infrastructure within the C-BT Project system. The contract would cover provisions relating to the timing and availability of the excess capacity as well as costs paid to the federal government for the use of these facilities. The terms of the contract would be negotiated with Reclamation in a public negotiation session.

Under the Reclamation Contract Option, water deliveries to NISP Participants would be made through releases from Carter Lake. NISP would supply like amounts of water to the Poudre River from Glade Reservoir in lieu of releases from Horsetooth Reservoir to the Poudre River via the Hansen Supply Canal. If future deliveries of C-BT water to the Poudre River decline to an amount that is consistently less than the volume required to facilitate what is effectively an exchange operation, it may be necessary to build a pipeline connection directly from Glade Reservoir to Horsetooth Reservoir (see Section 3.3.1).

2.1.3.2 Reclamation No Contract Option

The Reclamation No Contract Option does not involve exchanges of water with the C-BT system. Rather, water would be delivered from Glade Reservoir to all Participants by pipeline. Under the Reclamation No Contract Option, water stored in Glade Reservoir would be delivered to the NISP Participants by a pipeline connecting Glade Reservoir to the existing St. Vrain Supply Canal and the existing Southern Water Supply Pipeline (SWSP) below the outlet works of Carter Lake at Dam #1. This new pipeline, known as the Carter Pipeline (see Section 3.3.2), would have several turnouts to deliver raw water to NISP Participants having treatment facilities along its proposed north-south alignment. More detailed delivery information is provided in Section 5.1.2.

2.2 Alternative 3 – Cactus Hill Reservoir, Poudre Valley Canal Diversion, and the SPWCP

Alternative 3 (see **Figure 2.2**) is similar to Alternative 2 as described in the preceding sections, except that primary storage facility Glade Reservoir would be replaced with Cactus Hill Reservoir (190,000 AF active storage capacity). As described in Section 7 of the *CTP Hydrologic Modeling Report* (CDM Smith and DiNatale Water Consultants 2013), Alternative 3 was simulated in NISP Run 3b1 (with 2010 current conditions hydrology) and NISP Run 4b1 (with 2050 future conditions hydrology).

Cactus Hill Reservoir would be located on the plains a few miles northwest of Severance and just north of the existing Black Hollow Reservoir. The PVC would continue to be the primary diversion structure and means of conveyance of Poudre River water into storage for NISP. It would be enlarged by more than 1,000 cubic feet per second (cfs) over its existing approximate 250-cfs capacity. However, in contrast to the short distance of conveyance to the Glade Forebay, water destined for storage in Cactus Hill would traverse most of the 30-mile length of the PVC before turning out to a gravity pipeline north of Cobb Lake for delivery into Cactus Hill Reservoir. Alternative 3 would also include the SPWCP with Galeton Reservoir (45,624 AF active storage capacity), South Platte River diversion, and direct flow and reservoir exchanges with the Larimer Weld and New Cache irrigation systems as described in Section 2.1.2. Deliveries of NISP water would require the construction of new pipelines with direct connections to most of the Participants.

Due to the geography of Alternative 3 and infrastructure requirements. , the possibility of delivery by exchange through C-BT Project infrastructure was determined by the Corps to be infeasible. Therefore, the Reclamation Contract Option for Alternative 3 was not carried forward in the NISP SDEIS.

2.3 Alternative 4 – Cactus Hill Reservoir, Multiple Diversion Locations, and the SPWCP

Alternative 4 (see **Figure 2.3**) is similar to Alternative 3 in that it includes Cactus Hill Reservoir (190,000 AF active storage capacity), primary conveyance of Poudre River water to storage via the PVC, and the SPWCP with Galeton Reservoir (45,624 AF maximum capacity), South Platte River diversion, and direct flow and reservoir exchanges with the Larimer Weld and New Cache irrigation systems. As described in Section 7 of the *CTP Hydrologic Modeling Report* (CDM Smith and DiNatale Water Consultants 2013), Alternative 4 was simulated in NISP Run 3b2 (with 2010 current conditions hydrology) and NISP Run 4b2 (with 2050 future conditions hydrology).

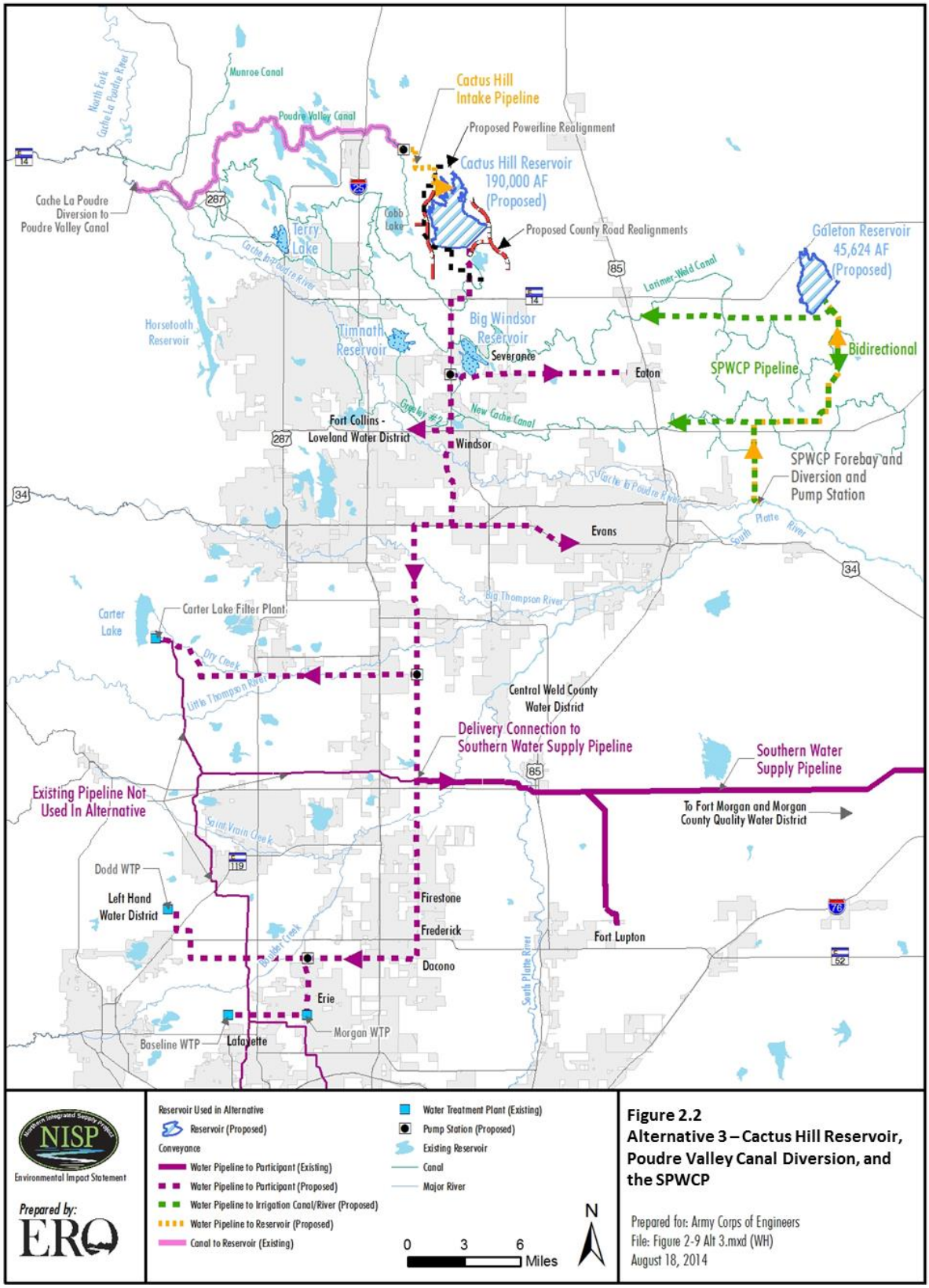

Figure 2.2
Alternative 3 – Cactus Hill Reservoir, Poudre Valley Canal Diversion, and the SPWCP

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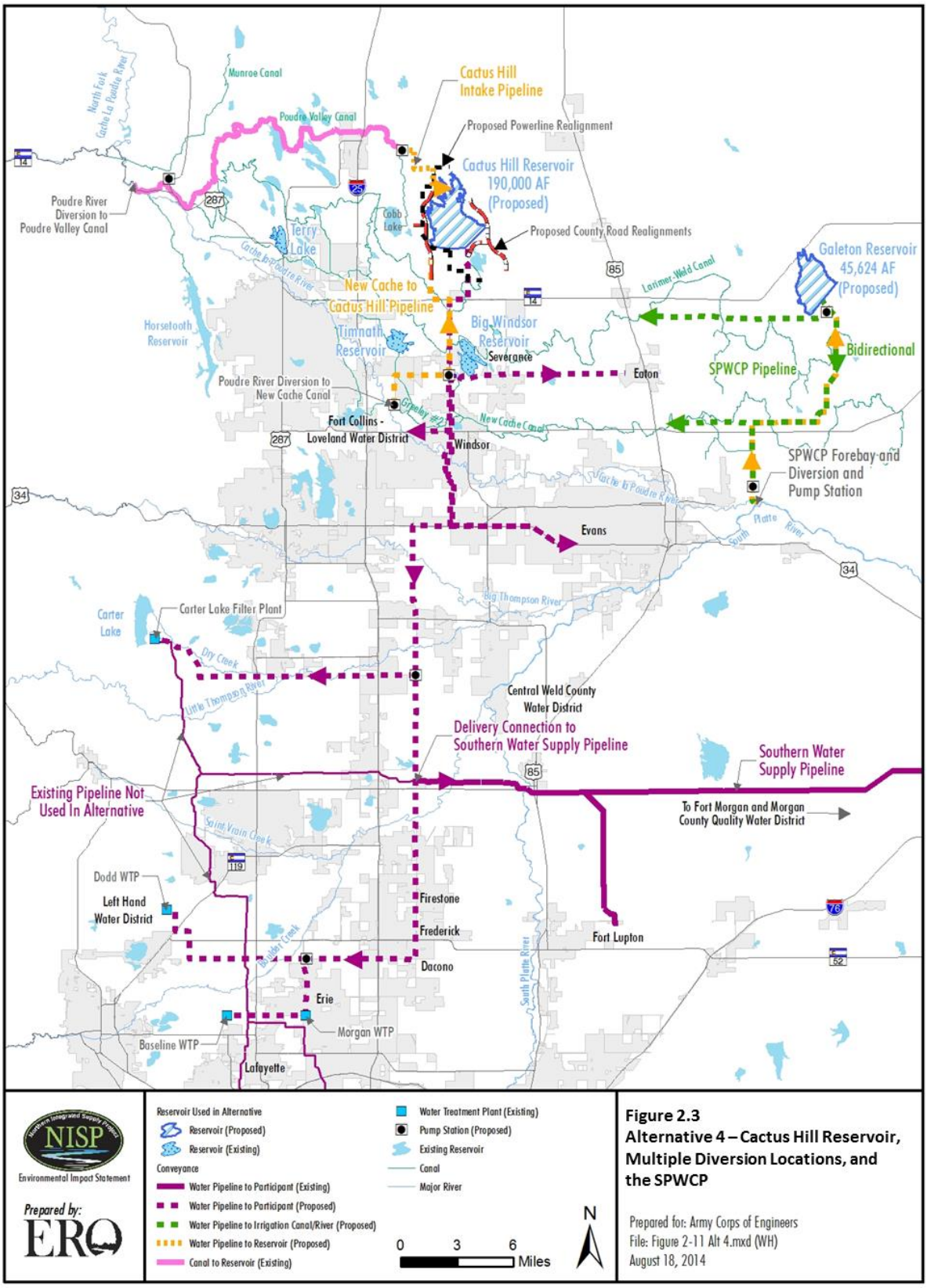

Figure 2.3
Alternative 4 – Cactus Hill Reservoir, Multiple Diversion Locations, and the SPWCP

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Alternative 4 is distinguished from the other action alternatives in that there would be two diversion points for conveyance to Cactus Hill Reservoir. Some of the direct flow exchange water would be diverted at a location downstream of the PVC. As modeled for SDEIS analyses (see Section 7 of the *CTP Hydrologic Modeling Report*), direct flow exchange water from Larimer Weld would be diverted or re-exchanged at or near the PVC as it is in Alternatives 2 and 3. However, New Cache direct flow exchange water would continue to flow downstream in the Poudre River channel to its current diversion location at the New Cache headgate east of Fort Collins and I-25 (see Section 7.4.3 of the *CTP Hydrologic Modeling Report*). This water would then be taken through a turnout from the New Cache Canal and routed by pump station and pipeline to storage in Cactus Hill Reservoir. Deliveries of NISP water would require the construction of new pipelines with direct connections to most of the Participants.

Due to the geography of Alternative 4, infrastructure requirements and diversions at the downstream New Cache headgate, the possibility of delivery by exchange through C-BT Project infrastructure was determined by the Corps to be infeasible. Therefore, the Reclamation Contract Option for Alternative 4 was not carried forward in the NISP SDEIS, consistent with Alternative 3.

Section 3

Existing and Proposed Infrastructure Associated with Alternative 2

The following sections describe existing and proposed infrastructure associated with all aspects of Alternative 2—diversion, conveyance, storage, and delivery of NISP water. The location, type, and size of infrastructure described in this section are based upon pre-design engineering analyses for the alternatives and options. Adjustments in the location, type, and size of infrastructure may be required to accommodate final project configurations based on engineering requirements, conditions imposed via permitting, and other aspects of the alternatives and options that are not known with certainty at this time. If future adjustments in project facilities or operations result in impacts that are substantially different than those analyzed in the FEIS, a supplemental NEPA analysis would be required.

3.1 Alternative 2 Diversions and Conveyance to Storage

NISP Alternative 2 proposes to develop existing conditional water rights to make diversions from the Poudre River and the South Platte River. The following sections describe the diversion structures and conveyance proposed to be used by NISP Alternative 2 to divert from these rivers.

3.1.1 Poudre River Diversions

Figure 3.1 shows existing and proposed water supply infrastructure (e.g., irrigation diversions, municipal intakes, reservoirs, points of release) within the reach of the Poudre River extending from the Munroe Canal headgate, located upstream of the confluence of the Poudre River mainstem and North Fork, down to the Larimer County Canal headgate. Proposed diversions from the Poudre River under NISP Alternative 2 would occur within this reach.

NISP Alternative 2 proposes to divert from the Poudre River using the District's 7/8th interest in the Grey Mountain junior conditional storage rights (May 2, 1980 priority) as a source of project yield. The Grey Mountain storage rights allow maximum annual storage of 220,000 AF; the District's 7/8th interest therefore has an annual limit of 192,500 AF. The remaining 1/8 interest in the Grey Mountain storage rights is owned by the Cache la Poudre Water Users Association (CLPWUA). For more information on this apportioning of the Grey Mountain storage right, see page 7-18 in Section 7.4.1.1 of the *CTP Hydrologic Modeling Report* (CDM Smith and DiNatale Water Consultants 2013).

The City of Fort Collins and the City of Greeley, Applicants for the HSWSPs, have proposed to purchase the 1/8th interest from the CLPWUA and use it as part of the supply for their proposed projects (Koch and Hoelscher 2006). This is further demonstrated in a stipulation between the District and Fort Collins in Case No. 2003CW405 (dated May 30, 2006), which stated the following:

> Fort Collins will make a good faith effort to obtain from the Cache La Poudre Water Users Association ('Association') some or all of the 1/8th interest in the Grey Mountain Right that is owned by the Association. If obtained from the Association, Fort Collins shall seek to adjudicate an alternate point of diversion and storage for its portion of the Grey Mountain Right to Halligan Reservoir.

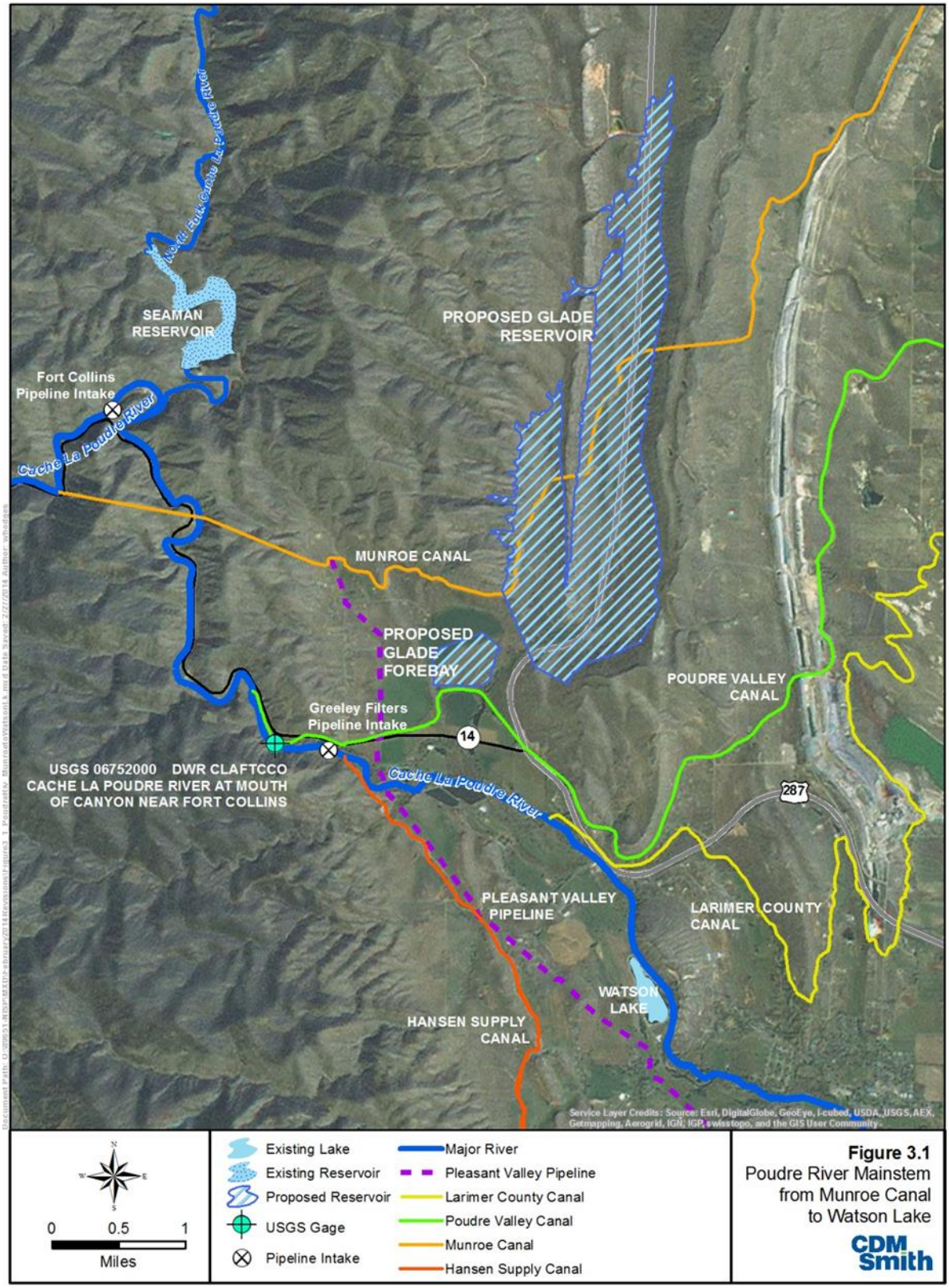

Figure 3.1
Poudre River Mainstem from Munroe Canal to Watson Lake

The Division 1 Water Court's ruling in Case No. 2003CW405 decreed the proposed Glade Reservoir as an alternate place of storage for the original Grey Mountain Dam and Reservoir (Case No. 80CW355) with three alternate points of diversion (APODs). Likewise, the Glade Forebay was decreed as an alternate point of storage for the original Cache la Poudre Forebay Dam and Reservoir. The three decreed APODs, shown in **Figure 3.2**, are as follows:

- PVC diversion
- North Poudre Supply Canal (a.k.a. Munroe Canal) diversion works
- Grey Mountain Dam original location.

The PVC headgate is proposed to be the point of diversion into Glade Reservoir for Alternative 2. Subsequent to the publication of the NISP DEIS (Corps 2008), the project was revised and no longer includes use of the Munroe Canal to divert water for storage in Glade Reservoir as part of NISP. The original Grey Mountain Dam location on the Poudre River mainstem is not proposed to be used as a diversion location into Glade Reservoir for any of the NISP action alternatives.

3.1.1.1 Poudre Valley Canal and the Glade Forebay

The PVC is proposed to be the primary point of diversion for NISP storage in Glade Reservoir (Alternative 2).

Existing Canal and Diversion Structure

The existing PVC is owned by the Windsor Reservoir and Canal Company and has a capacity of 250 to 300 cfs. The existing diversion structure is located on the Poudre River mainstem, adjacent to Colorado Highway 14, about a half-mile upstream of the U.S. Geological Survey (USGS) Poudre River at Canyon Mouth streamflow gage. The South Platte Decision Support System (SPDSS) memorandum documenting the Larimer and Weld Irrigation Company (Leonard Rice Engineers [LRE] 2005) further described the existing canal as follows:

> The Poudre Valley Canal headgate is located on the north side of the Cache la Poudre River approximately 2 miles downstream from the confluence of the North Fork and mainstem of the Cache la Poudre River. Poudre Valley Canal shares its headgate with Canon Canal Company Ditch…In addition to diverting water directly from the Cache la Poudre River, Poudre Valley Canal can receive Colorado-Big Thompson (C-BT) water directly through the Windsor Extension of the Hansen Supply Canal.
>
> The earth lined Poudre Valley Canal travels in a general easterly direction through Larimer County within Water District 3 and terminates at Cobb Lake…Douglas Reservoir, [Reservoir No. 8], Annex No. 8, Elder Reservoir, and Cobb Lake are filled through inlet ditches that divert from the Poudre Valley Canal. As the Poudre Valley Canal travels to its terminus at Cobb Lake, the canal crosses Dry Creek, Boxelder Creek, and Indian Creek.

LRE (2005) also reported that the total length of the PVC is "approximately 30 miles" and that the PVC "is only used to fill reservoirs."

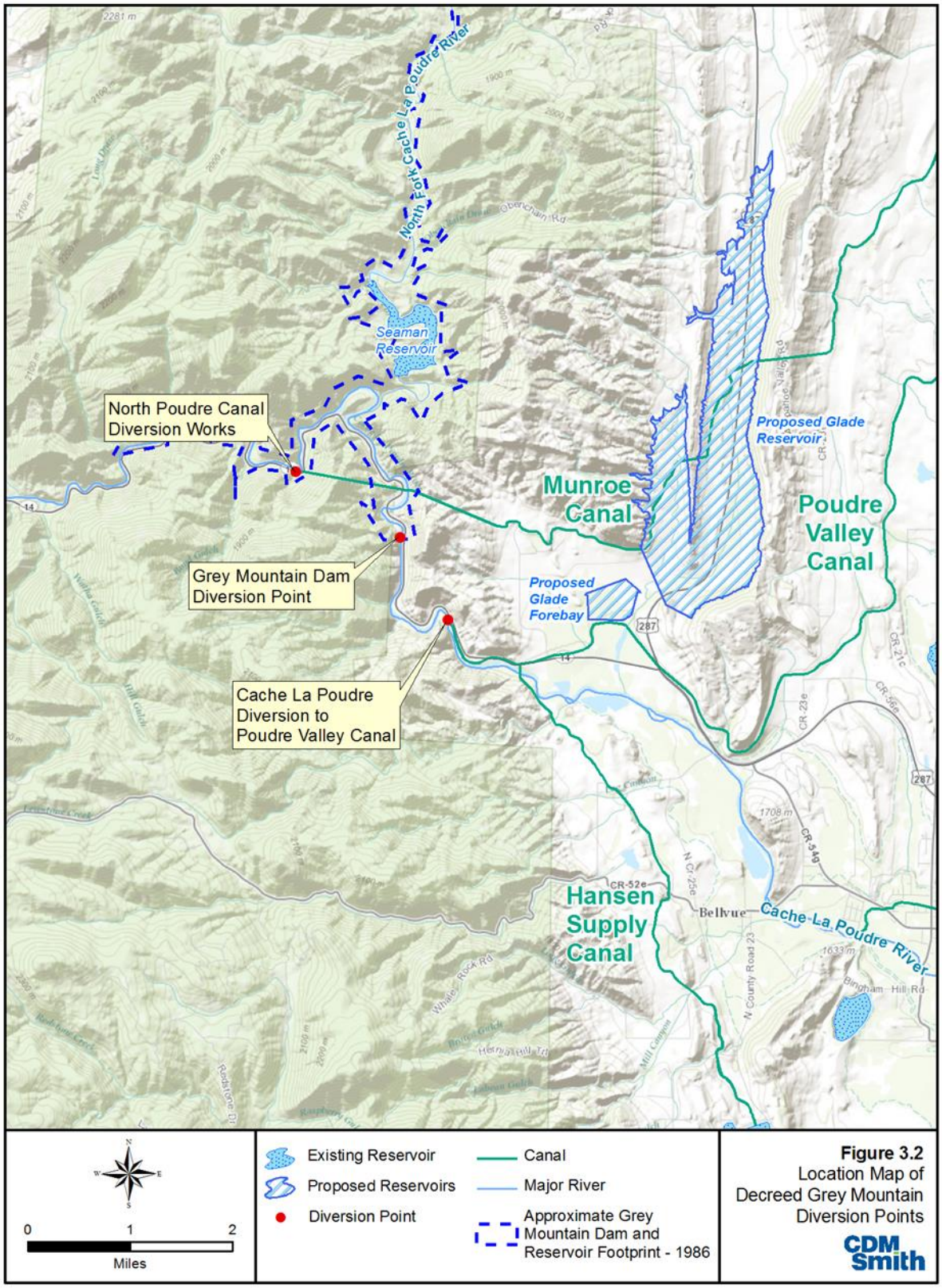

Figure 3.2
Location Map of Decreed Grey Mountain Diversion Points

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Improvements to the PVC for NISP

GEI and Integra (2010a) described the use of the PVC for NISP Alternative 2 as follows:

> The Poudre Valley Canal (PVC) provides the principal conveyance of water from the Cache la Poudre River to the Glade Complex (west-to-east). It is also now [proposed to be] both the operational and emergency discharge conveyance from Glade Reservoir to the Poudre River (east-to-west). These functions will require modifications to the existing diversion on the Poudre River, upgrades to the Canal itself, and a turnout structure to the Glade Forebay. Additionally, a new spillway/discharge facility from the Poudre Valley Canal to the Poudre River will be required.

The existing diversion dam and headgate would be upgraded "to assure that an adequate supply of water can be delivered to the Glade Forebay for pumping into Glade Reservoir when water is available during high flow periods on the Poudre River" (GEI and Integra 2010a). As stated in the Case No. 2003CW405 decree, "Water would be conveyed through an enlarged Poudre Valley Canal for a distance of approximately 10,800 feet to the Glade Reservoir Forebay." Canal upgrades for this distance would only be applicable to NISP Alternative 2.

GEI and Integra (2010a) described the necessary upgrades to the PVC, which would be designed to meet the standards of C-BT Project canals:

> The Poudre Valley Canal will require modifications that will convey deliveries of up to [1,200 cfs above existing capacity] from the Poudre River to the Glade Forebay (west-to-east) and will carry emergency drawdown flows of up to 900 cfs from the Glade Forebay to the Poudre River (east-to-west). These modifications will consist of removal of accumulated sediment, re-grading the canal invert to re-establish profile, widening the cross section at necessary locations, and raising embankments where required...As the west-to-east flowing PVC approaches the proposed Glade Dam location, a turn-out will be installed to divert water north from the PVC to the Glade Forebay, located just below and south[west] of the Glade Dam.

Additional modifications to the PVC would include lining the canal with clay or concrete and the placement of necessary flow regulation structures. The 1,200 cfs maximum delivery for NISP above the existing PVC capacity is consistent with the upper limit of the pump curve for the Glade Reservoir Pumping Station (see Section 3.2.1.1), which ranges from 700 cfs when the reservoir volume is high to 1,200 cfs when the reservoir levels are low (see pages 7-16 and 7-17 in Section 7.4.1.1 of the *CTP Hydrologic Modeling Report* [CDM Smith and DiNatale Water Consultants 2013]).

Glade Forebay

GEI and Integra (2010a) described the Glade Forebay, a small regulating reservoir to which water would be delivered from the upgraded PVC and from which water would be pumped to fill available storage capacity in Glade Reservoir:

> The main purpose of the Glade Forebay is to regulate flows diverted from the Cache la Poudre River delivered via the Poudre Valley Canal. The forebay acts to balance the peak canal deliveries and allows for efficient operation of the Glade Pumping Station. The forebay will also serve as a discharge and energy dissipation location for return flows from Glade Reservoir to the Cache la Poudre River as well as a discharge location for emergency overflows from the Munroe Canal Bypass system [see Section 3.3.3]. The Glade Forebay is located immediately downstream of the Glade Dam and north of the Poudre Valley Canal.

The exact size and location of the Glade Forebay—shown approximately in Figure 3.2 above and **Figure 3.3** below—does not affect the hydrologic modeling or other analyses of proposed NISP operations, although it may affect other resource analyses.

3.1.1.2 Estimated NISP Diversions at PVC

NISP diversions at the PVC would include water derived from all of the project's proposed water supply sources: (a) yield from the Grey Mountain rights; (b) yield from the SPWCP exchanges with Larimer Weld and New Cache; and (c) yield from the SPWCP exchanges with Terry Lake, Big Windsor Reservoir, and Timnath Reservoir. The Reclamation Contract Option and Reclamation No Contract Option for Alternative 2 are differentiated by the ways in which water is routed to storage or used immediately by exchange with C-BT (Reclamation Contract Option) or immediate pipeline delivery to the project Participants (Reclamation No Contract Option). Estimates of diversions and immediate use for both options are derived from the same modeled diversions; the Reclamation No Contract Option is based directly on model output, and the Reclamation Contract Option required additional spreadsheet post-processing. The 56-year annual average modeled diversions are approximately 43,300 AFY in both NISP Run 3a (Alternative 2 with current conditions hydrology) and NISP Run 4a (Alternative 2 with future conditions hydrology). Under the Reclamation No Contract Option (Table 3.4), this full amount is diverted at the PVC headgate. Under the Reclamation Contract Option (Table 3.1), post-processing analyses determined that about 80 percent of the modeled diversions would be taken at the PVC headgate, and the balance would be exchanged directly with the C-BT system (Table 3.2) or returned to the river as surplus diversions (Table 3.3) in excess of available storage capacity.

Estimated NISP Diversions at PVC – Reclamation Contract Option

Under the Reclamation Contract Option for Alternative 2, some water would be diverted from the Poudre River at the PVC for storage in Glade Reservoir, and some water would be exchanged directly with the C-BT system, in which case the water would not be diverted from the Poudre River by NISP. Instead, this water would be left in the river below the PVC headgate in lieu of releases of C-BT water from the Hansen Supply Canal, which releases to the Poudre River about 1.5 miles downstream (see Figure 3.3).

The volumes of water to be diverted at the PVC or exchanged with C-BT were estimated by spreadsheet post-processing of output from the CTP hydrologic modeling. The calculations did not differentiate NISP water sources but rather looked at total headgate diversions through PBN link HG_GLADE and compared that value to the modeled Hansen Supply Canal deliveries to the Poudre River and PVC (via Windsor Extension). The amount of exchange with C-BT was limited by the lesser of the modeled NISP headgate diversions or the modeled Hansen releases. The amount of modeled HG_GLADE flow that could not be directly exchanged with C-BT was the preliminary revised estimate of net diversions at the PVC to storage in Glade Reservoir.

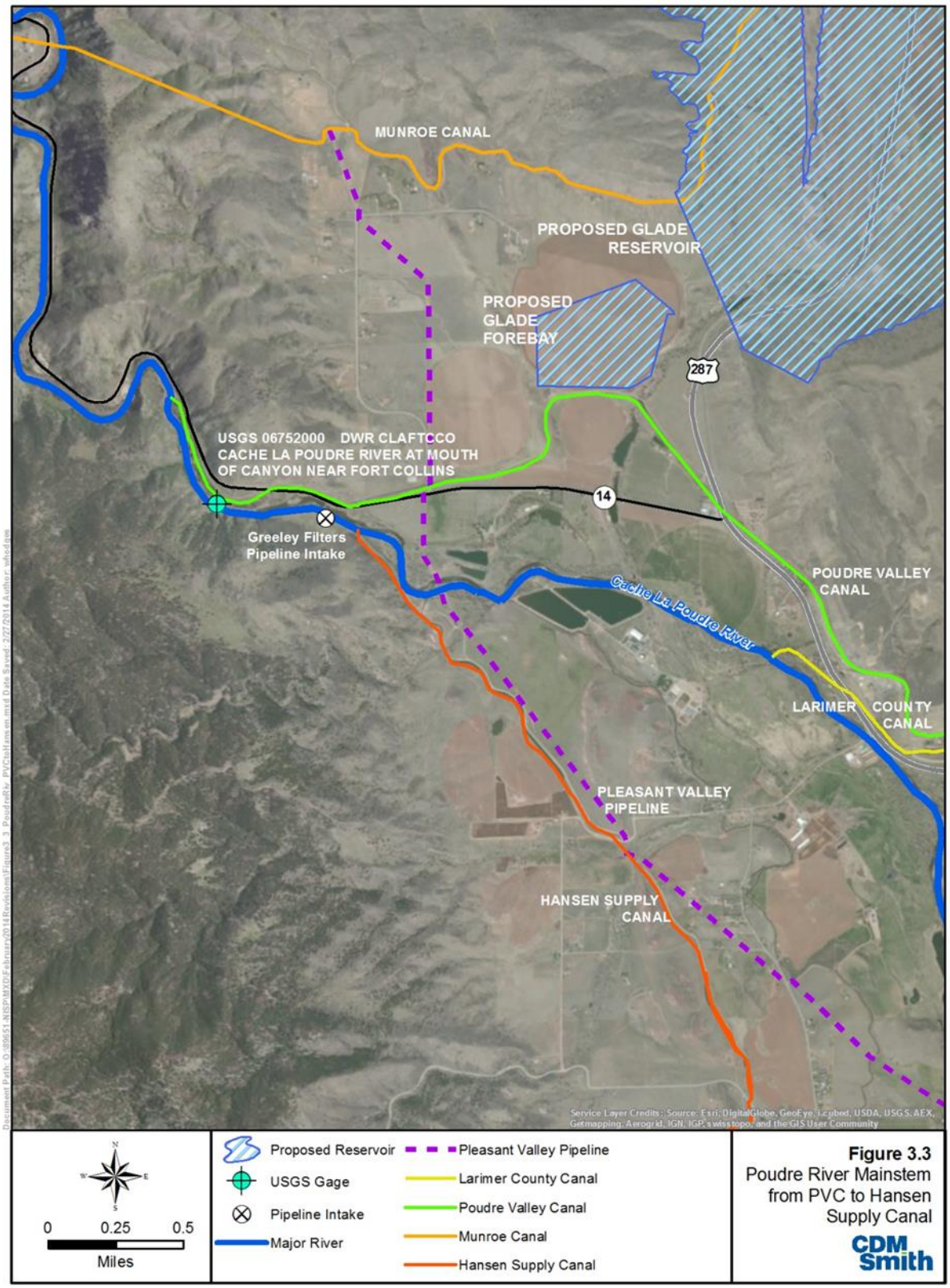


Figure 3.3
Poudre River Mainstem from PVC to Hansen Supply Canal

Subsequent steps in the post-processing spreadsheets re-calculated the Glade Reservoir mass balance to account for inflows and outflows that differ from PBN calculations. In a few months of the study period, the revised estimate of inflows to Glade Reservoir resulted in storage exceeding the proposed active storage capacity of the reservoir (170,000 AF), so any amount above that limit was truncated, treated as a bypassed diversion, and left in the river. These calculations allocated appropriate volumes of water to NISP while maintaining consistency with the 43,300 AFY average annual diversions modeled in the PBN, i.e., after post-processing, the sum of average annual diversions to storage, exchanges with C-BT, and bypassed diversions to avoid reservoir spills remained equal to 43,300 AFY.

Table 3.1 summarizes the estimated diversions of Grey Mountain and SPWCP exchange water at the PVC to fill Glade Reservoir based on spreadsheet post-processing of model output from NISP Run 3a and NISP Run 4a. **Table 3.2** summarizes the estimated direct exchange between NISP and C-BT, water that would be bypassed at the PVC headgate and left in the river in lieu of releases from the Hansen Supply Canal. **Table 3.3** summarizes the amount of modeled diversion that would instead be bypassed at the PVC headgate to avoid exceeding the active storage capacity of the proposed Glade Reservoir.

Values are shown in units of acre-feet; 1 AF is equivalent to about 325,851 gallons. Values presented in Table 3.1 and subsequent tables are rounded as follows:

- Value <= 99 not rounded
- Value >= 100 and <= 999 rounded to nearest 10
- Value >= 1,000 rounded to nearest 100

Due to this rounding, there may be slight differences in sum total values. Values in the average (Avg) columns are additive such that the sum of the monthly averages is equal to the annual average, all calculated over IY 1950-2005. Minimum (Min) and Maximum (Max) values are not additive. The monthly minimum and maximum values are those occurring within the 56-year study period and do not necessarily occur within the same year. The annual minimum and maximum are for the full years having the lowest and highest flows, respectively.

Table 3.1. Estimated Diversions at the PVC to Fill Glade Reservoir, Alternative 2, Reclamation Contract Option, IY 1950-2005

Month	Alternative 2 with Current Conditions Hydrology (NISP Run 3a)				Alternative 2 with Future Conditions Hydrology (NISP Run 4a)			
	Number of Years with Simulated NISP Diversions at PVC (out of 56)	Min [AF]	Max [AF]	Avg [AF]	Number of Years with Simulated NISP Diversions at PVC (out of 56)	Min [AF]	Max [AF]	Avg [AF]
November	0	0	0	0	0	0	0	0
December	2	0	1,300	27	0	0	0	0
January	1	0	3,400	61	2	0	490	14
February	2	0	230	7	1	0	1,000	18
March	9	0	2,300	190	4	0	2,300	94
April	28	0	24,100	2,600	26	0	26,900	2,500
May	46	0	56,700	11,400	47	0	54,300	11,000
June	48	0	65,000	17,400	49	0	62,800	17,700
July	9	0	12,300	810	11	0	12,300	990
August	31	0	8,600	1,600	33	0	7,500	1,400
September	37	0	3,000	850	37	0	3,000	620
October	22	0	3,200	200	22	0	1,800	57
ANNUAL	—	**580**	**92,300**	**35,100**	—	**460**	**89,100**	**34,400**

Table 3.2. Estimated Direct Exchange between NISP and C-BT (modeled NISP diversions instead bypassed at the PVC headgate), Alternative 2, Reclamation Contract Option, IY 1950-2005

Month	Alternative 2 with Current Conditions Hydrology (NISP Run 3a)				Alternative 2 with Future Conditions Hydrology (NISP Run 4a)			
	Number of Years with Bypassed NISP Diversions at PVC (out of 56)	Min [AF]	Max [AF]	Avg [AF]	Number of Years with Bypassed NISP Diversions at PVC (out of 56)	Min [AF]	Max [AF]	Avg [AF]
November	0	0	0	0	0	0	0	0
December	0	0	0	0	0	0	0	0
January	0	0	0	0	0	0	0	0
February	0	0	0	0	0	0	0	0
March	0	0	0	0	0	0	0	0
April	3	0	1,500	49	7	0	2,200	140
May	12	0	10,900	1,300	13	0	11,200	1,400
June	9	0	10,800	1,400	8	0	11,200	1,400
July	43	0	12,300	3,700	44	0	12,300	4,100
August	15	0	10,700	1,200	25	0	8,100	1,200
September	5	0	1,700	96	16	0	2,100	320
October	1	0	15	0	4	0	15	1
ANNUAL	—	**0**	**18,000**	**7,700**	—	**0**	**18,900**	**8,500**

Table 3.3. Estimated Bypass of Modeled NISP Diversions at PVC to Avoid Reservoir Spills, Alternative 2, Reclamation Contract Option, IY 1950-2005

Month	Alternative 2 with Current Conditions Hydrology (NISP Run 3a)				Alternative 2 with Future Conditions Hydrology (NISP Run 4a)			
	Number of Years with Bypassed NISP Diversions at PVC (out of 56)	Min [AF]	Max [AF]	Avg [AF]	Number of Years with Bypassed NISP Diversions at PVC (out of 56)	Min [AF]	Max [AF]	Avg [AF]
November	0	0	0	0	0	0	0	0
December	0	0	0	0	0	0	0	0
January	0	0	0	0	0	0	0	0
February	0	0	0	0	0	0	0	0
March	0	0	0	0	0	0	0	0
April	0	0	0	0	0	0	0	0
May	1	0	14,400	260	1	0	1,700	30
June	12	0	4,200	170	5	0	16,900	350
July	1	0	4,400	78	1	0	3,900	69
August	0	0	0	0	0	0	0	0
September	0	0	0	0	0	0	0	0
October	0	0	0	0	0	0	0	0
ANNUAL	**—**	**0**	**18,600**	**500**	**—**	**0**	**18,600**	**450**

Under both current (NISP Run 3a) and future (NISP Run 4a) conditions hydrology, the sum of annual average values from Tables 3.1 through 3.3 is 43,300 AFY, consistent with the CTP modeling as described above:

- Current Conditions = 35,100 + 7,700 + 500 = 43,300 AFY
- Future Conditions = 34,400 + 8,500 + 450 = 43,300 AFY

Figure 3.4 illustrates, for Alternative 2 with current conditions (NISP Run 3a), the annual diversions to storage in Glade Reservoir based on the same data summarized in Table 3.2. The two bypassed volumes are summarized in Figure 3.4 as well—(1) the diversions that would be bypassed at the PVC for direct exchange with C-BT, and (2) diversions that would be bypassed at the PVC due to Glade Reservoir capacity limitations. Both diversion bypasses were calculated by spreadsheet post-processing of model results. Estimated reductions in Hansen Supply Canal releases as part of the proposed exchange with NISP are reported in Section 3.4.2. **Figure 3.5** shows the same for Alternative 2 with future conditions (NISP Run 4a).

The estimated diversions to storage are influenced by hydrology, the volume of water already in storage, and other factors. Under current and future conditions hydrology, the estimated diversions to storage follow similar patterns, and, although there are some shifts in the timing of those diversions, the 56-year average annual diversions to storage are similar (35,100 AFY in Run 3a versus 34,400 AFY in Run 4a).

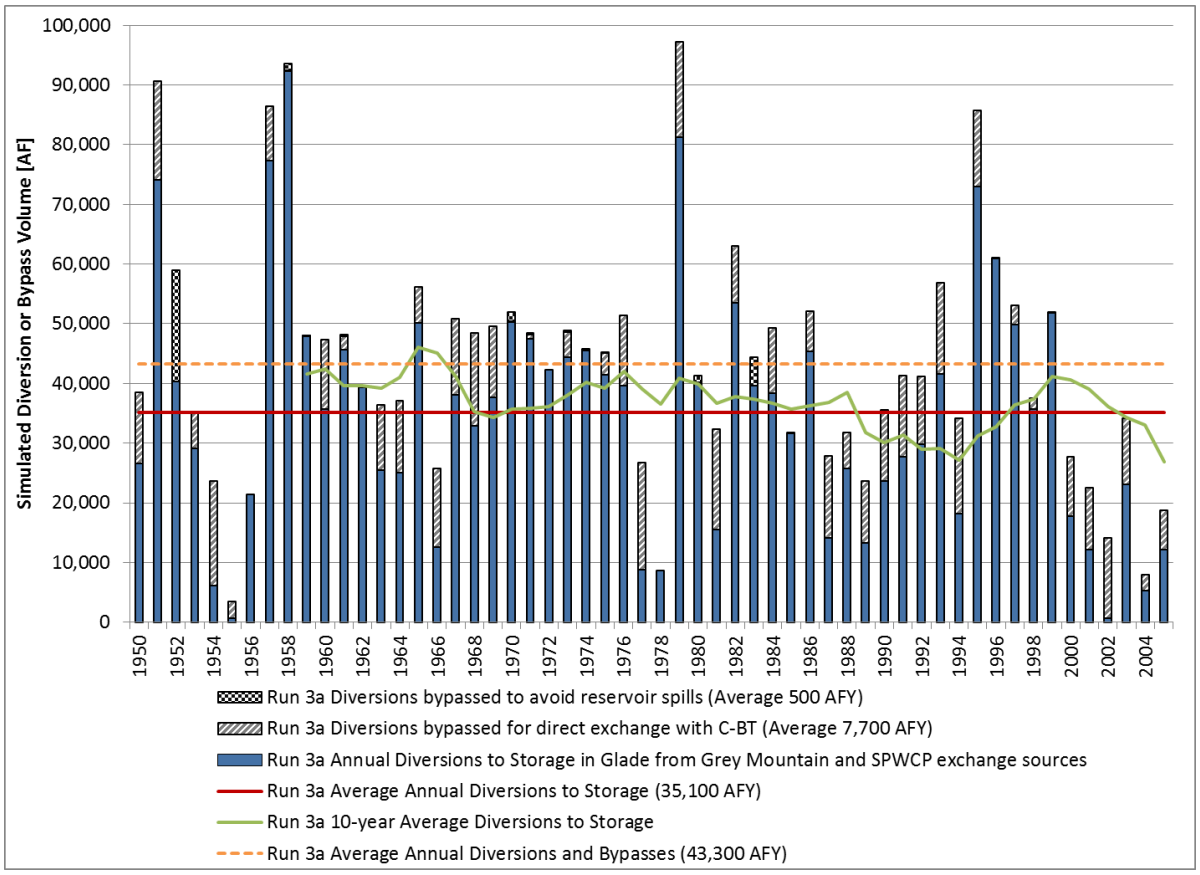


Figure 3.4 Annual Diversions at the PVC to Fill Glade Reservoir and Bypassed Diversions, Alternative 2 with Current Conditions Hydrology (NISP Run 3a), Reclamation Contract Option, IY 1950-2005

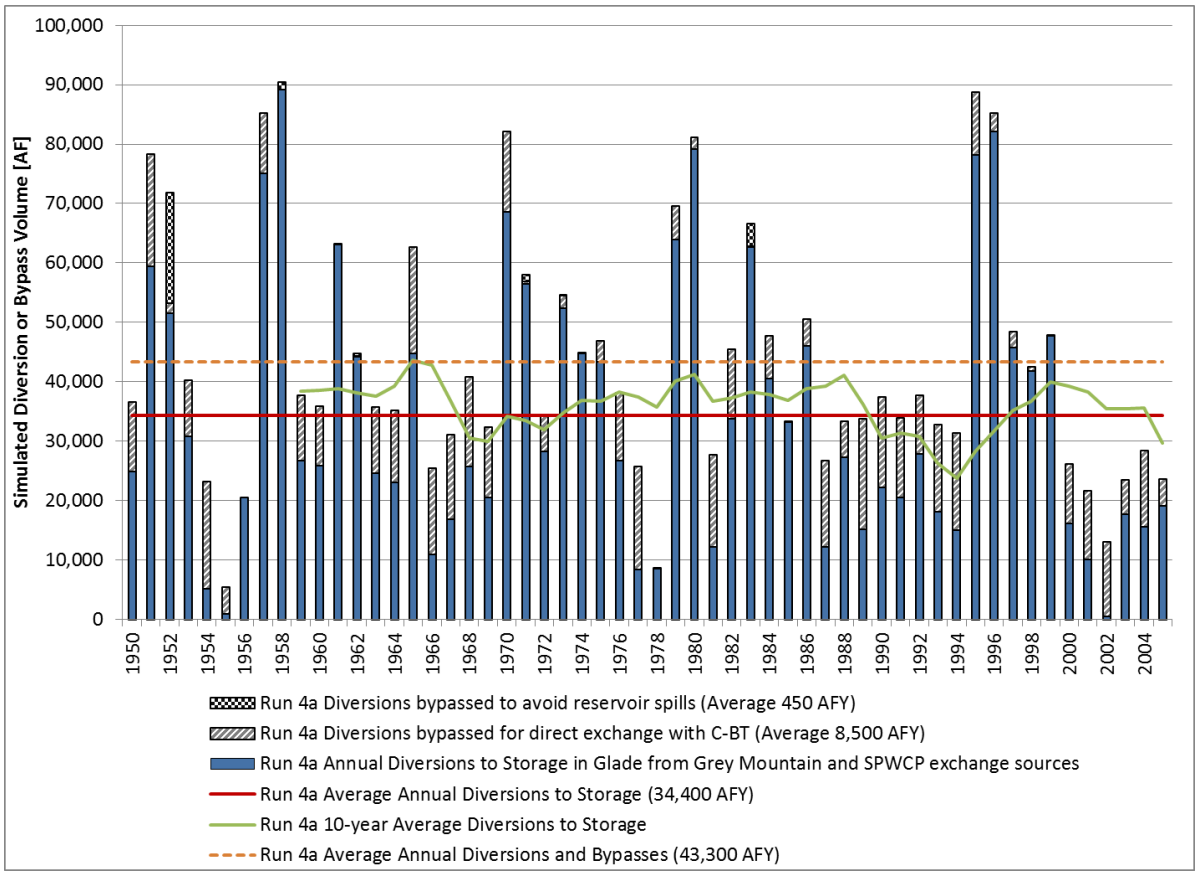


Figure 3.5 Annual Diversions at the PVC to Fill Glade Reservoir and Bypassed Diversions, Alternative 2 with Future Conditions Hydrology (NISP Run 4a), Reclamation Contract Option, IY 1950-2005

Estimated NISP Diversions at PVC – Reclamation No Contract Option

Under the Reclamation No Contract Option for Alternative 2, there would be no exchange with C-BT. Rather than bypassing diversions, more water would be diverted at the PVC headgate compared to the Reclamation Contract Option. Deliveries of C-BT water to Poudre Basin allottees via the Hansen Supply Canal would be unaffected by NISP and not curtailed, consistent with deliveries made under current (CTP Run 1, Table 3.10) or future conditions hydrology (CTP Run 2, Table 3.11), and therefore released in greater volumes than under the Reclamation Contract Option for Alternative 2. All sources of water for NISP would be diverted at the PVC; most water would be routed to storage in Glade Reservoir, while some would bypass storage and be routed to pipelines for immediate delivery to the project Participants. **Table 3.4** below summarizes the modeled occurrence frequency and magnitude of NISP diversions at the PVC for Alternative 2 with the Reclamation No Contract Option under 2010 current conditions and 2050 future conditions during the IY 1950-2005 study period.

Table 3.4. Modeled NISP Diversions at the PVC for Storage or Immediate Use, Alternative 2, Reclamation No Contract Option, IY 1950-2005

Month	Alternative 2 with Current Conditions Hydrology (NISP Run 3a)							Alternative 2 with Future Conditions Hydrology (NISP Run 4a)						
	Number of Years with Simulated NISP Diversions at PVC HG_GLADE (out of 56)	Min HG_ GLADE [AF]	Max HG_ GLADE [AF]	Avg HG_ GLADE [AF]	Avg GreyMtn Fill [AF]	Avg Exch Fill [AF]	Avg Direct Exch [AF]	Number of Years with Simulated NISP Diversions at PVC HG_GLADE (out of 56)	Min HG_ GLADE [AF]	Max HG_ GLADE [AF]	Avg HG_ GLADE [AF]	Avg GreyMtn Fill [AF]	Avg Exch Fill [AF]	Avg Direct Exch [AF]
November	0	0	0	0	0	0	0	0	0	0	0	0	0	0
December	2	0	1,300	27	0	27	0	2	0	1,300	27	0	27	0
January	1	0	3,400	61	8	53	0	1	0	3,400	61	8	53	0
February	2	0	230	7	0	7	0	2	0	230	7	0	7	0
March	9	0	2,300	190	56	140	0	9	0	2,300	190	56	140	0
April	30	0	24,100	2,700	1,300	1,300	48	30	0	24,100	2,700	1,300	1,300	48
May	54	0	56,700	12,900	5,600	4,200	3,100	54	0	56,700	12,900	5,600	4,200	3,100
June	55	0	65,000	19,000	12,100	3,300	3,600	55	0	65,000	19,000	12,100	3,300	3,600
July	49	0	12,300	4,600	110	1,700	2,700	49	0	12,300	4,600	110	1,700	2,700
August	40	0	10,700	2,700	0	540	2,200	40	0	10,700	2,700	0	540	2,200
September	41	0	3,000	950	0	0	960	41	0	3,000	950	0	0	960
October	23	0	3,200	200	100	93	4	23	0	3,200	200	100	93	4
ANNUAL	**—**	**3,500**	**97,200**	**43,300**	**19,200**	**11,500**	**12,600**	**—**	**5,400**	**90,400**	**43,300**	**18,000**	**12,000**	**13,400**

Under Alternative 2 with current conditions, combined diversions to storage from the Grey Mountain right and SPWCP exchanges average about 30,700 AFY, or about 70 percent of the diversions at the PVC headgate (43,300 AFY). Future conditions results show about 30,000 AFY diverted into storage, or about 69 percent of modeled PVC headgate diversions for NISP (43,300 AFY). In both scenarios, the other 30 percent of diversions are routed for immediate delivery to the NISP Participants to meet demands.

Annual diversions for storage or immediate use are illustrated in **Figures 3.6 and 3.7**, based on model output from NISP Run 3a (Alternative 2 with 2010 current conditions hydrology) and NISP Run 4a (Alternative 2 with 2050 future conditions hydrology), respectively. The average HG_GLADE columns are equal to the sum of the average GreyMtnFill, ExchFill, and DirectExch columns. The data in the DirectExch columns represents the immediate delivery to NISP Participants and is entirely different from the direct exchange with C-BT described above for the Reclamation Contract Option.

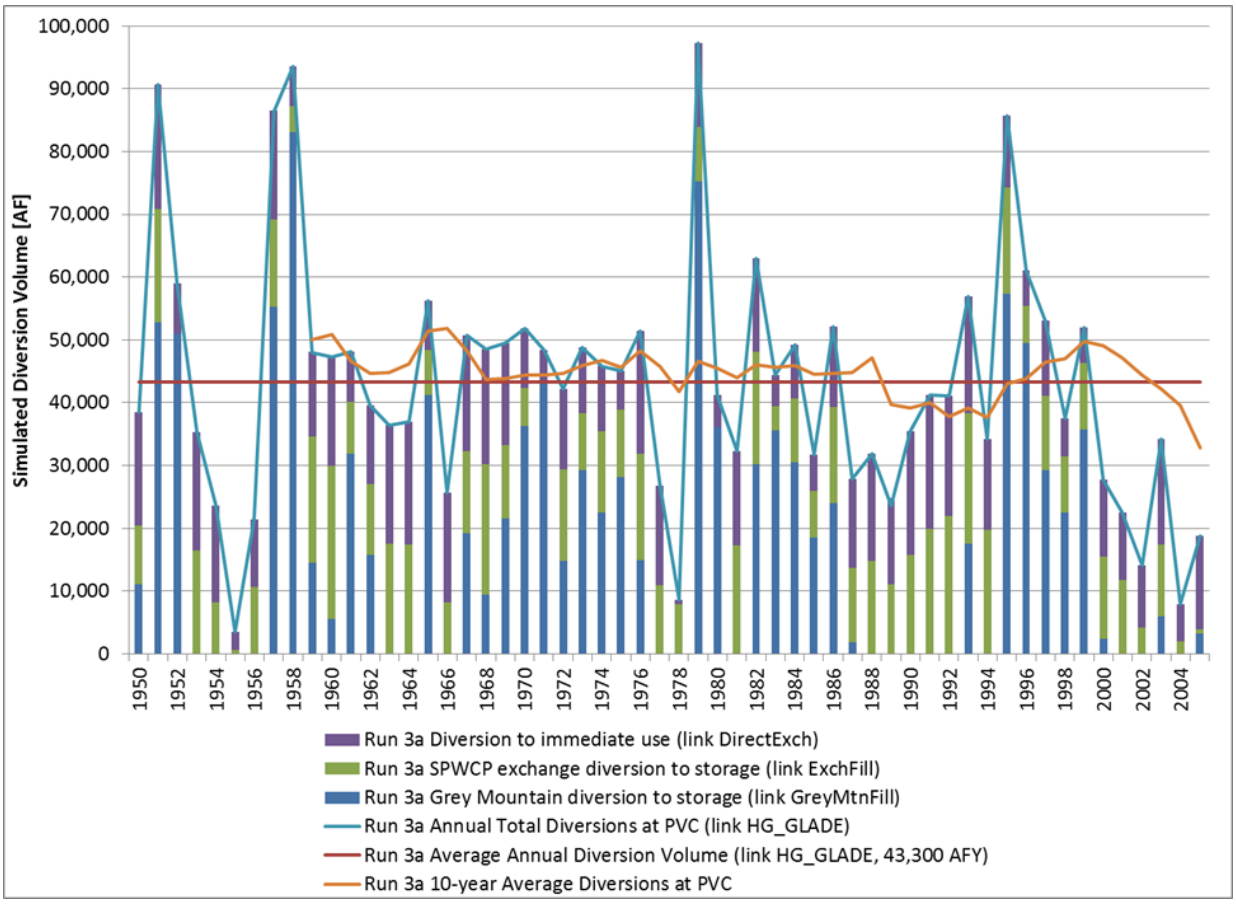


Figure 3.6 Modeled NISP Diversions at the PVC for Storage or Immediate Use, Alternative 2 with Current Conditions, Reclamation No Contract Option, IY 1950-2005

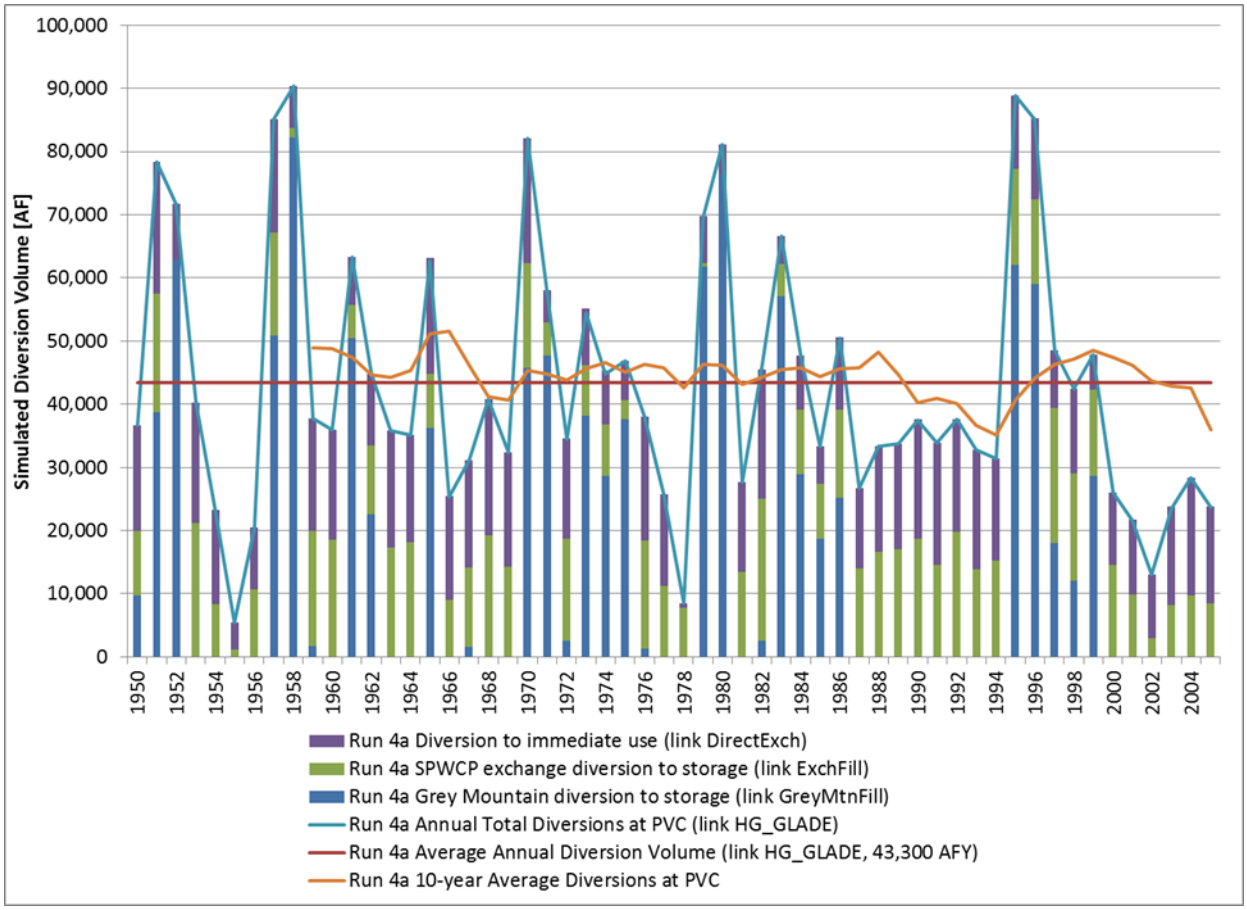


Figure 3.7 Modeled NISP Diversions at the PVC for Storage and Immediate Use, Alternative 2 with Future Conditions, Reclamation No Contract Option, IY 1950-2005

3.1.2 South Platte River Diversion

NISP proposes to divert water from the South Platte River using the District's conditional water rights for the SPWCP with a priority date of December 11, 1992. The proposed SPWCP South Platte River intake, forebay, and pumping station were previously described in two technical memoranda prepared by GEI (2006b, 2010b). Most of the content of the next three paragraphs is summarized from those two documents.

Water would be pumped into Galeton Reservoir from a new diversion dam/forebay complex located on the South Platte River approximately 500 feet downstream of the confluence of the Cache la Poudre River with the South Platte River, and approximately 3 miles northwest of the town of Kersey, in Weld County, Colorado (see **Figure 3.8**). The diversion dam itself would consist of a fixed concrete weir, weir sections with adjustable gates at the main river channel, a radial gate section near the north river bank, and short embankment sections at each end of the weir.

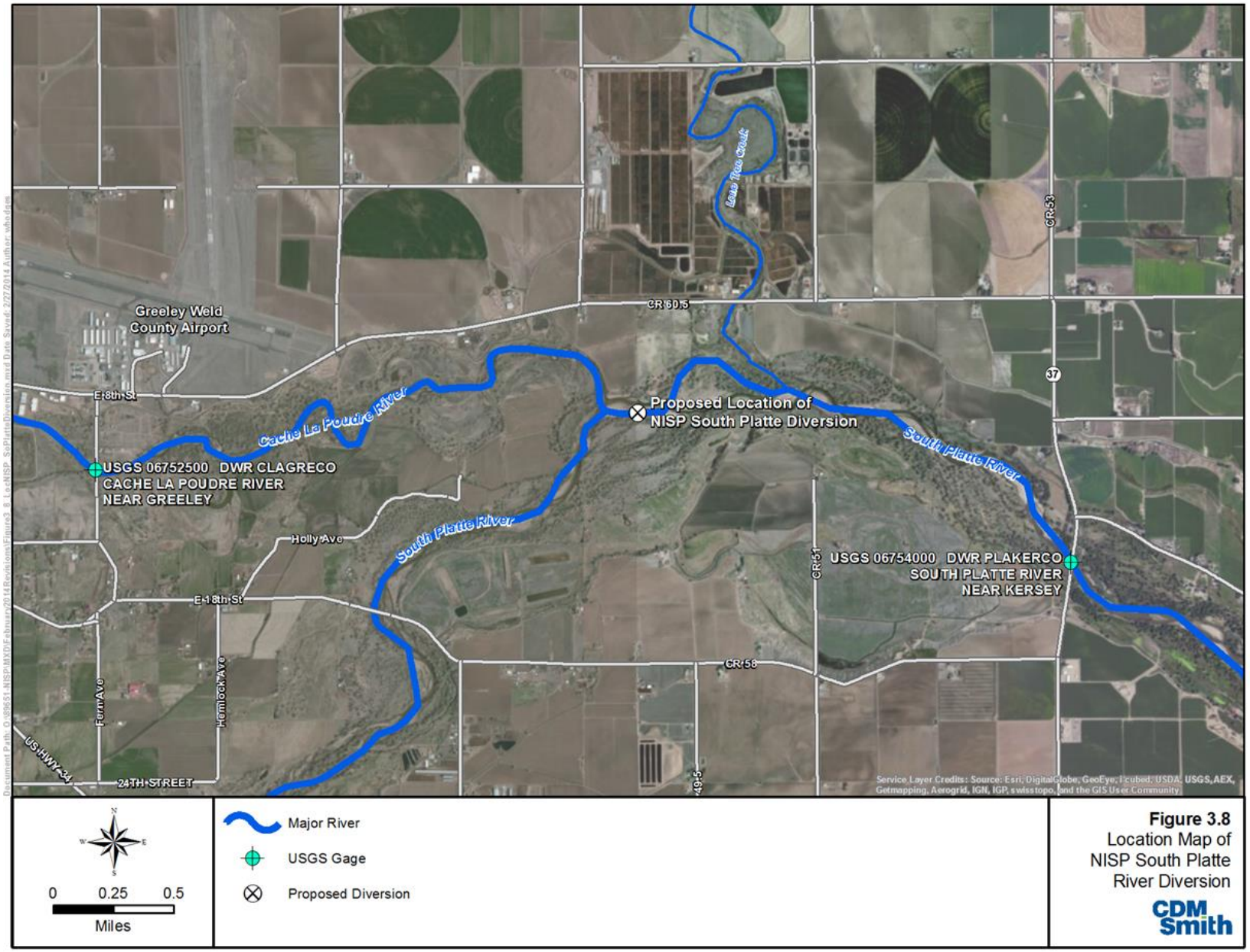


Figure 3.8
Location Map of
NISP South Platte
River Diversion

CDM Smith

CDM Smith

Diversion capacity of 200 cfs would be provided through a headworks with an intake section on the north river bank to a 150-foot-long concrete box flume (or large diameter conduit) that would release to a forebay for the SPWCP South Platte pumping station. **Table 3.5** summarizes simulated NISP diversions at the SPWCP South Platte River intake under Alternative 2, and **Figure 3.9** illustrates annual South Platte River diversions based on NISP Run 3a (Alternative 2 with current conditions hydrology) and NISP Run 4a (Alternative 2 with future conditions hydrology). The Reclamation Contract Option and Reclamation No Contract Option would be mechanisms for delivering water to the NISP Participants and would not affect the proposed South Platte River diversions.

An off-channel forebay would be constructed north of the South Platte River, with the exact location to be determined between the SDEIS and the FEIS for NISP. The proposed forebay would provide approximately 160 AF of regulating storage by excavation below the ground. Bottom dimensions are proposed to be 800 feet by 800 feet, assuming 3H:1V side slopes and a water depth of 10 feet. Further refinement of regulating storage capacity and forebay dimensions will be needed during subsequent design phases; however, the exact size and location of the forebay does not have any effect on the hydrologic modeling results presented in this report. The SPWCP pumping station would have a maximum capacity of 200 cfs and would deliver water to Galeton Reservoir requiring a pipeline with approximately 2,000 feet of 96-inch pipe and 78,680 feet of 68-inch pipe.

Table 3.5. Estimated NISP Diversions at the SPWCP South Platte River Intake, Alternative 2, IY 1950-2005

Month	Alternative 2 with Current Conditions Hydrology (NISP Run 3a)				Alternative 2 with Future Conditions Hydrology (NISP Run 4a)			
	Number of Years with Simulated NISP Diversions (out of 56)	Min [AF]	Max [AF]	Avg [AF]	Number of Years with Simulated NISP Diversions (out of 56)	Min [AF]	Max [AF]	Avg [AF]
November	37	0	11,900	2,300	28	0	11,900	2,100
December	26	0	12,300	2,200	30	0	12,300	3,000
January	30	0	12,300	2,700	29	0	12,300	2,700
February	23	0	11,100	1,800	22	0	11,100	1,800
March	51	0	12,300	1,600	50	0	12,300	1,500
April	53	0	11,900	1,900	53	0	11,900	2,200
May	48	0	12,300	4,000	45	0	12,300	5,000
June	42	0	11,900	4,300	40	0	11,900	4,400
July	28	0	12,300	2,000	27	0	12,300	2,000
August	19	0	12,300	1,800	23	0	12,300	1,700
September	42	0	11,900	2,900	44	0	11,900	2,700
October	42	0	5,200	830	40	0	5,400	760
ANNUAL	—	**1,600**	**63,500**	**28,400**	—	**1,500**	**58,800**	**29,800**

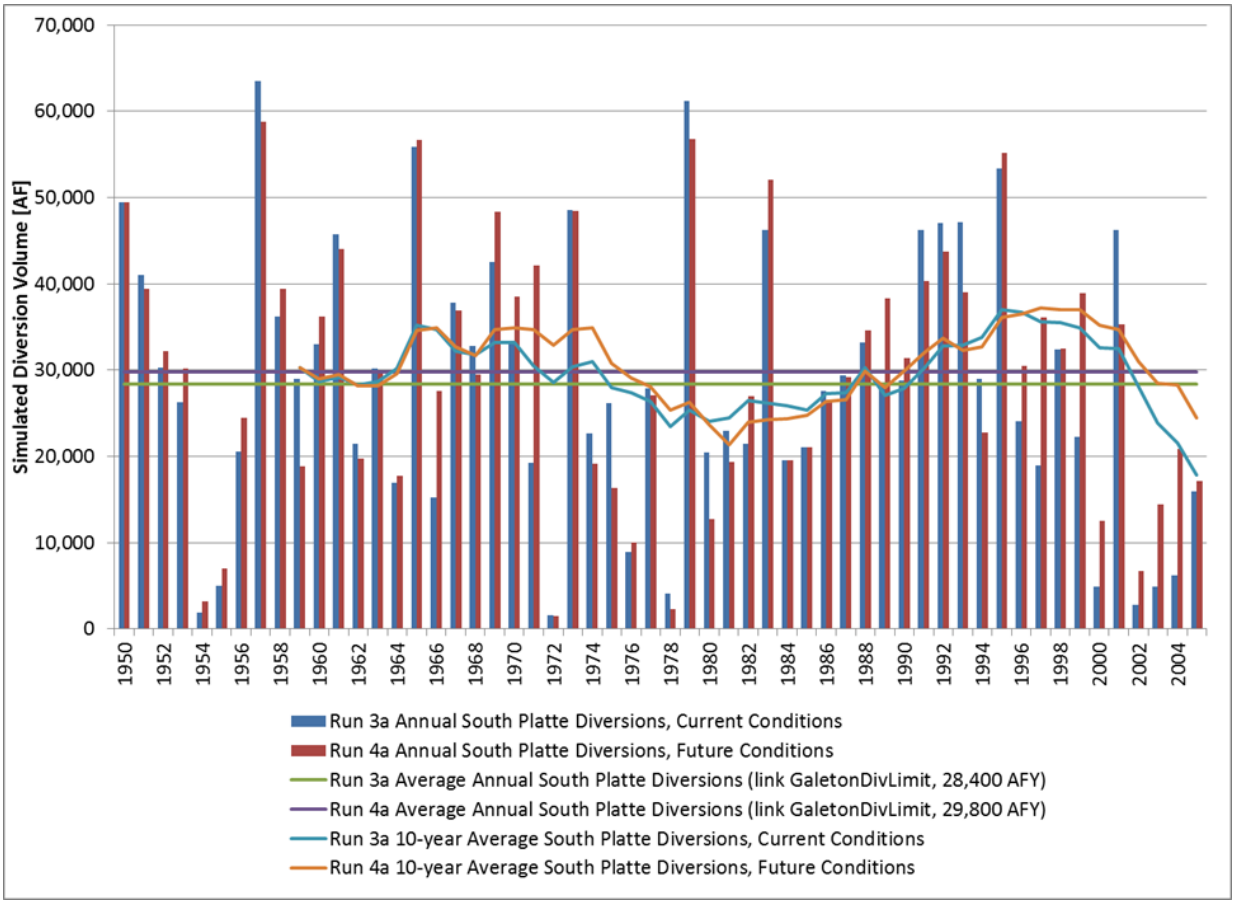


Figure 3.9 Estimated NISP Diversions at the SPWCP South Platte River Intake, Alternative 2, IY 1950-2005

3.2 Alternative 2 Storage Reservoirs

The primary storage facility for NISP Alternative 2 is the proposed Glade Dam and Reservoir. Galeton Reservoir is proposed to store water diverted from the South Platte River for exchange with the Larimer Weld and New Cache systems as part of the SPWCP component of NISP.

3.2.1 Glade Dam and Reservoir

The proposed Glade Reservoir would have an active storage capacity[3] of 170,000 AF, with approximately 3,000 AF of inactive storage[4]. Total reservoir volume would be about 173,000 AF, but only the active storage capacity was accounted for in the hydrologic modeling of NISP alternatives. Glade Reservoir would occupy a site located about 5 miles northwest of Fort Collins in the foothills of the Colorado Front Range. The reservoir would be built between the ridges of the hogbacks directly north of Ted's Place, on U.S. Highway 287; the basin is approximately 1.2 miles wide at its maximum

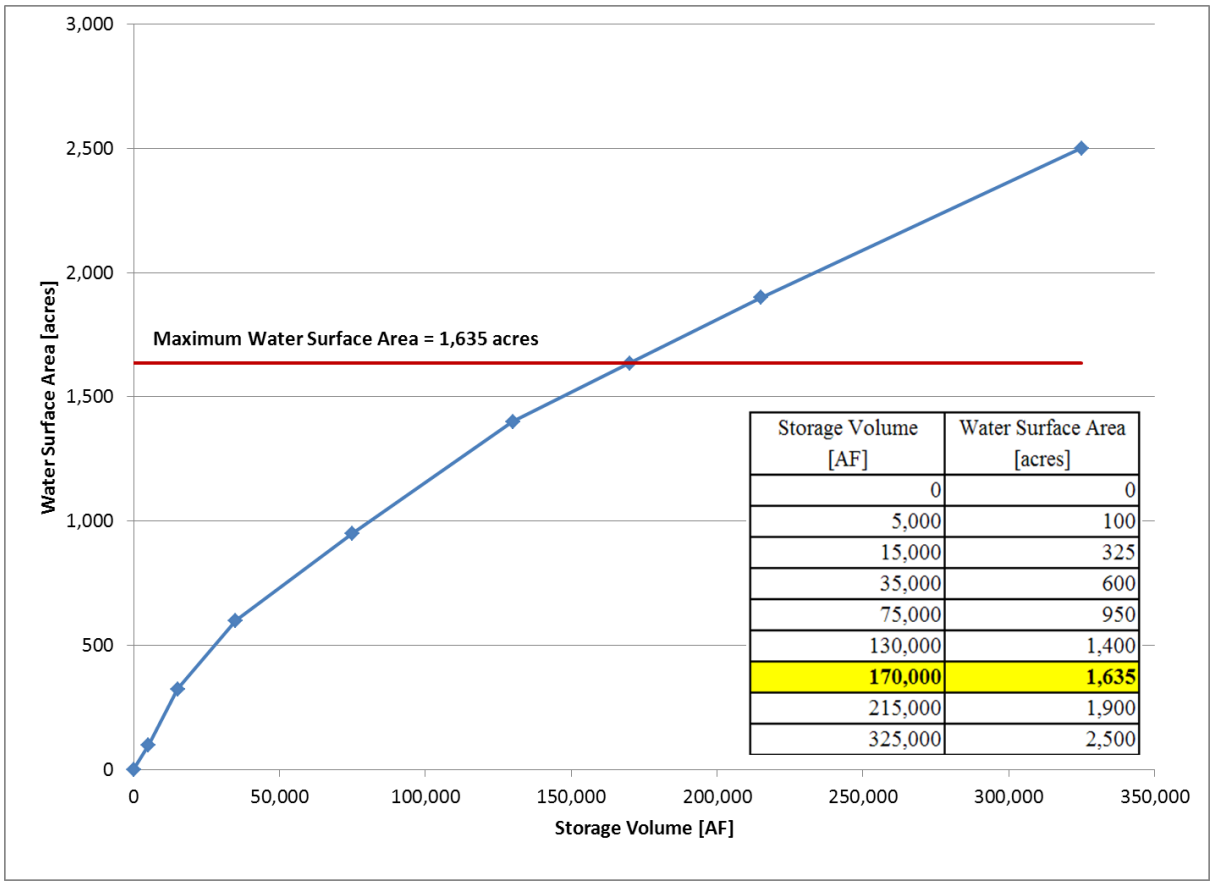
[3] Active Storage Capacity is the volume of the reservoir that would be filled and drawn down as part of normal reservoir operations.

[4] Inactive Storage, or dead pool, is that volume retained in storage below the reservoir outlet(s) for the accumulation of sediment and other purposes.

and almost 5 miles long, covering portions of an area called Hook and Moore Glade and an adjacent drainage. The reservoir would be "off-channel" and would not inundate the Cache la Poudre River or other perennial streams (GEI 2006a, GEI and Integra 2010 a). Five miles of U.S. Highway 287 and a portion of the existing Munroe Canal would be inundated and would therefore have to be bypassed around the reservoir.

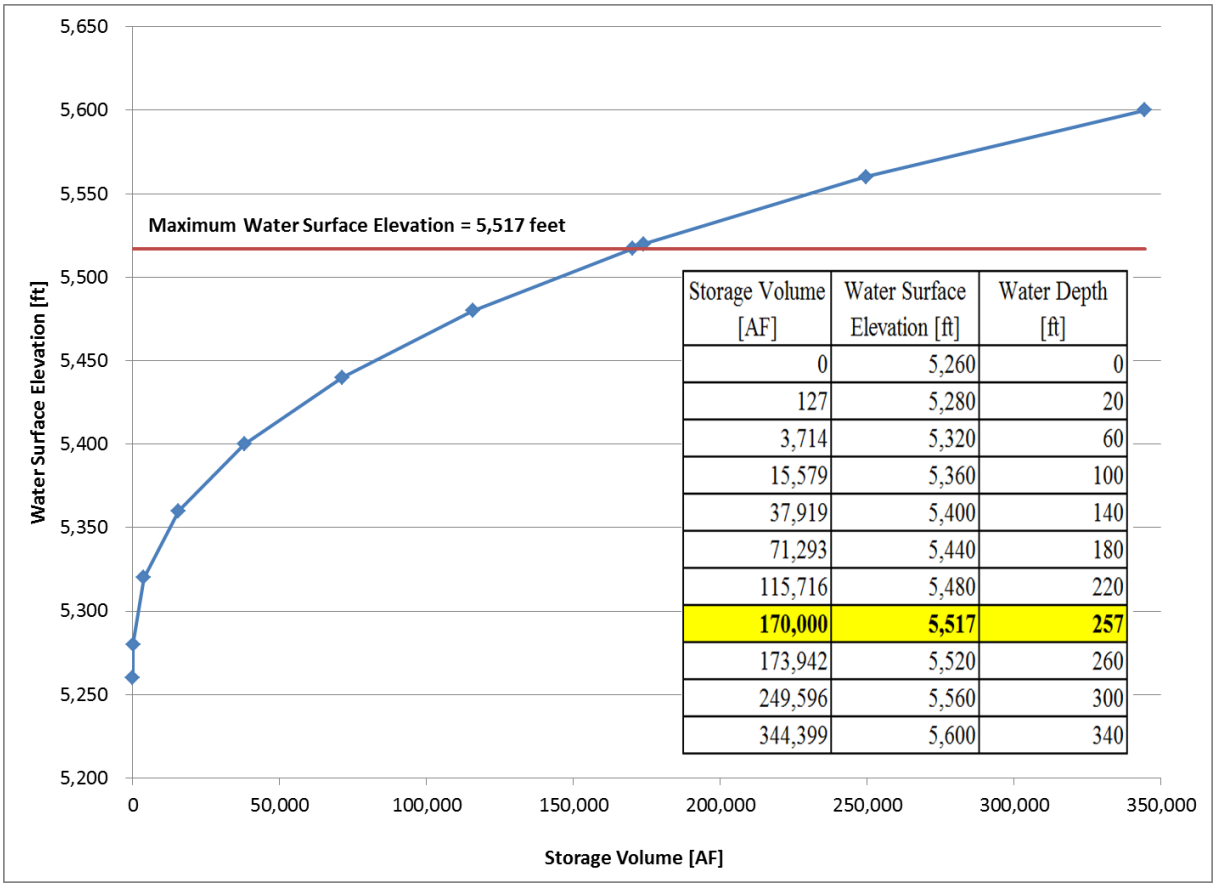
GEI and Integra (2010a), citing the NISP Phase II Alternative Evaluation Report (MWH 2004), state that "it was determined that the Glade Dam will be a zoned earth-rock fill embankment dam with a total height of 270 feet, a crest length of about 5,000 feet, and riprap slope protection on the upstream face. This type of dam would be the most suitable based on site topography, geologic conditions, and availability of construction material."

Figures 3.10 and 3.11 show the storage-area and storage-elevation relationships for the proposed Glade Reservoir both graphically and in tables. At maximum capacity, Glade Reservoir would have a surface area of about 1,635 acres (2.5 square miles) and a water surface elevation (WSEL) of 5,517 feet above mean sea level (±5 feet, subject to detailed survey and final design). Translated from elevation above mean sea level to depth above ground level or depth above the dead pool (inactive storage), the mean depth of the Glade Reservoir active storage volume would be 217 feet and maximum depth would be 257 feet. The mean hydraulic residence time, based on reservoir operations, would be approximately 4.6 years.



Storage Volume [AF]	Water Surface Area [acres]
0	0
5,000	100
15,000	325
35,000	600
75,000	950
130,000	1,400
170,000	**1,635**
215,000	1,900
325,000	2,500

Figure 3.10 Storage-Area Relationship for the Proposed Glade Reservoir



Storage Volume [AF]	Water Surface Elevation [ft]	Water Depth [ft]
0	5,260	0
127	5,280	20
3,714	5,320	60
15,579	5,360	100
37,919	5,400	140
71,293	5,440	180
115,716	5,480	220
170,000	**5,517**	**257**
173,942	5,520	260
249,596	5,560	300
344,399	5,600	340

Figure 3.11 Storage Elevation Relationship for the Proposed Glade Reservoir

3.2.1.1 Glade Pumping Station

GEI and Integra (2010a) describe the Glade Pumping Station as follows:

> Cache la Poudre River water delivered via the Poudre Valley Canal will be discharged into the Glade Forebay. The main purpose of the Glade Pumping Station will be to deliver this water from the forebay into Glade Reservoir…[T]he new configuration of the Glade Pumping Station includes the pumps required for delivery of flows from the forebay to Glade Reservoir as well as the two (2) Munroe Bypass pumping units that [could] serve the dual role of pumping Glade to Horsetooth transfer water [if the Reclamation Contract Option is permitted for Alternative 2].

The proposed pumping capacity from the Glade Forebay into Glade Reservoir ranges from 700 to 1,200 cfs as an inverse function of reservoir storage volume; the pumping rate is greatest at low storage volumes and decreases as storage volume increases. GEI and Integra (2010a) also report the following:

> The Munroe Canal Bypass system requires pumping for flow rates greater than 100 cfs up to a maximum of 250 cfs…Under certain water surface elevations (WSEL), water can be transferred by gravity from Glade Reservoir to Horsetooth Reservoir. When these conditions are not met, water will need to be pumped to Horsetooth Reservoir using the two Munroe Bypass pumps housed in the Glade Pumping Station facility.

Further details about the physical configuration of the Glade Pumping Station can be found in the appendices (GEI and Integra 2010a) as well as Section 7 of the NISP Phase II Alternative Evaluation Final Report (MWH 2004).

3.2.1.2 Glade Reservoir Outlet, Spillway, and Releases to the Poudre River and PVC

The proposed Glade Reservoir would include a multi-level outlet tower to allow for selective withdrawals from different reservoir elevations. The exact configuration of this tower, including gate spacing, screening requirements, and flow requirements, would be determined after consultation with Colorado Parks and Wildlife (CPW) and the Dam Safety Branch of the Colorado Division of Water Resources (DWR).

As discussed in Section 3.1.1.1 above, GEI and Integra (2010a) explain that the PVC would be "both the operational and emergency discharge conveyance from Glade Reservoir to the Poudre River (east-to-west)…[and] a new spillway/discharge facility from the Poudre Valley Canal to the Poudre River will be required." Furthermore:

> Hydraulic analyses indicate that the [improved] Poudre Valley Canal [could] carry up to 900 cfs in reverse direction (east-to-west) from the Glade Forebay to a point approximately 5,400 feet upstream of the forebay to a proposed spillway structure. The proposed spillway would discharge releases from the Glade Reservoir/Forebay via the PVC to the Cache la Poudre River. The 900 cfs target capacity is the emergency draw-down requirement for Glade Reservoir to meet dam safety requirements of the Colorado State Engineer's Office. Normal operational releases from the forebay through this spillway structure will be significantly less than 900 cfs.

The spillway would be a simple concrete structure, approximately 20 feet in width with appropriate energy dissipation.

Under the Reclamation Contract Option for Alternative 2, the proposed releases from Glade Reservoir to the river are most often part of an exchange with C-BT. Thus, in order to maintain consistent C-BT flows in the river, the outfall structure is proposed to be located on the north bank of the Poudre River across from the Hansen Supply Canal outfall (see **Figure 3.12**). There may also be a low-flow outlet to the Poudre River via a pipeline to be located across the river from Greeley's Bellvue pipeline intake.

For the Reclamation No Contract Option for Alternative 2, there would be no releases for exchange with C-BT, but the same release structure across from the Hansen outfall may be constructed as described above for making emergency releases from Glade Reservoir. Alternately, if the Reclamation Contract Option for Alternative 2 is not implemented, Glade Reservoir may make emergency releases to the Poudre River at the original proposed location, the low-flow outlet location a short distance upstream near the Bellvue Filter Plant.

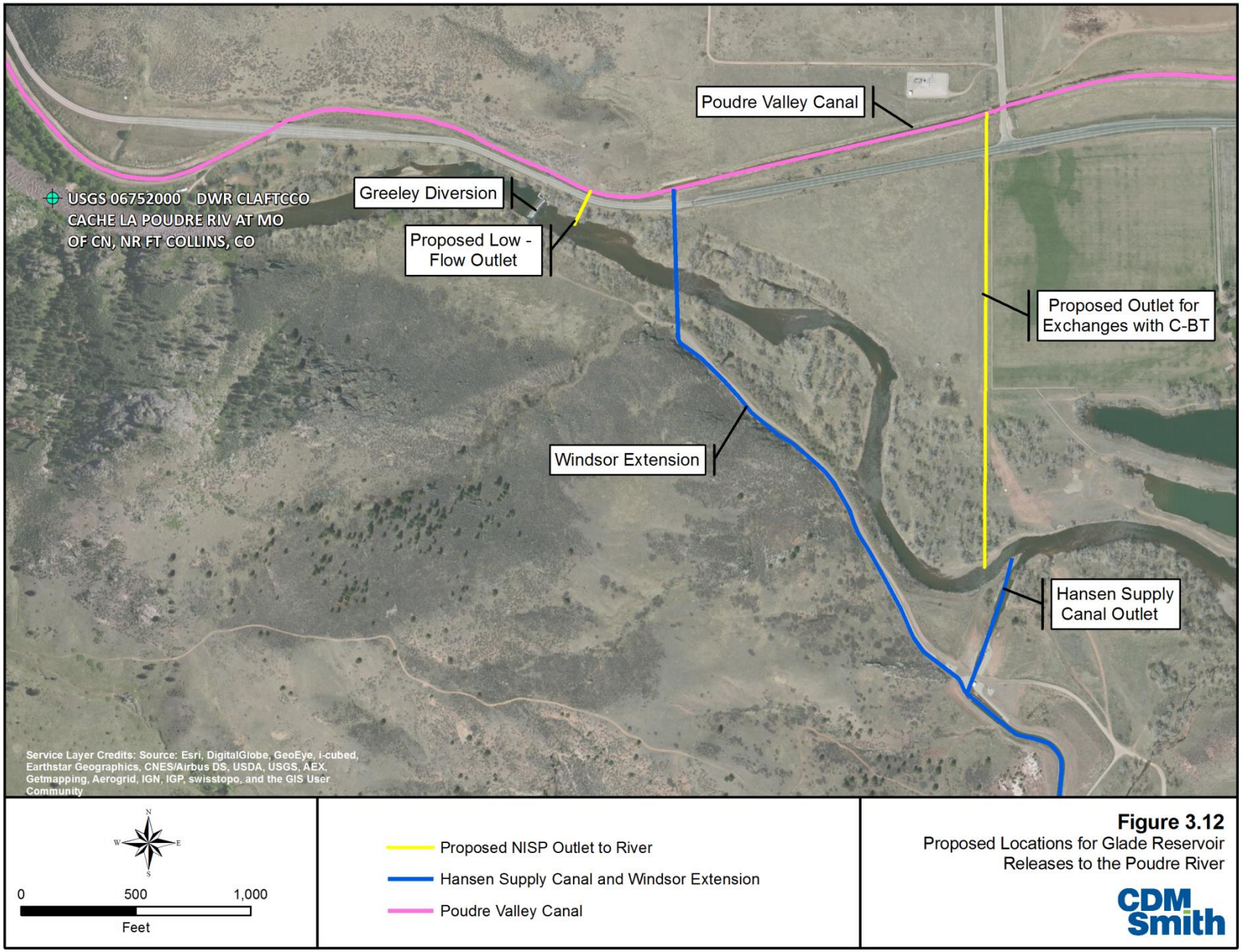


Figure 3.12
Proposed Locations for Glade Reservoir Releases to the Poudre River

Glade Reservoir Release to the Poudre River to Replace C-BT Water (Reclamation Contract Option only)

To the extent possible under the Reclamation Contract Option for Alternative 2, NISP would directly exchange with the C-BT system by leaving divertible flows in the Poudre River below the PVC headgate in lieu of releases to the river from the Hansen Supply Canal. This is shown previously in Table 3.2 and Figures 3.4 and 3.5. However, the volume of water involved in that proposed operation would not be enough to cover the full 29,500 AFY delivered to NISP Participants from Carter Lake. As a result, Hansen Supply Canal releases would be further curtailed, and releases would be made from Glade Reservoir to the Poudre River to provide supplemental water to Poudre Basin C-BT allottees. **Table 3.6** summarizes the estimated Glade Reservoir releases to the Poudre River under the Reclamation Contract Option with current and future conditions. These estimates are based on spreadsheet post-processing of model output from NISP Run 3a and NISP Run 4a.

Table 3.6. Glade Reservoir Releases to the Poudre River, Alternative 2, Reclamation Contract Option, IY 1950-2005

Month	Alternative 2 with Current Conditions Hydrology (NISP Run 3a)				Alternative 2 with Future Conditions Hydrology (NISP Run 4a)			
	Number of Years with Simulated NISP Releases (out of 56)	Min [AF]	Max [AF]	Avg [AF]	Number of Years with Simulated NISP Releases (out of 56)	Min [AF]	Max [AF]	Avg [AF]
November	0	0	0	0	0	0	0	0
December	0	0	0	0	0	0	0	0
January	0	0	0	0	0	0	0	0
February	0	0	0	0	0	0	0	0
March	0	0	0	0	0	0	0	0
April	9	0	2,700	160	11	0	2,700	300
May	9	0	25,000	1,800	8	0	23,500	1,600
June	7	0	9,500	590	6	0	11,800	550
July	46	0	29,800	16,400	44	0	29,700	13,300
August	15	0	19,900	2,400	14	0	19,100	2,000
September	4	0	6,500	210	9	0	3,300	300
October	4	0	1,900	53	12	0	1,600	190
ANNUAL	—	**11,800**	**29,800**	**21,600**	—	**3,100**	**29,800**	**18,200**

Glade Reservoir Release to the PVC to Replace C-BT Water (Reclamation Contract Option only)

The Hansen Supply Canal delivers water to the PVC via the Windsor Extension, which turns out just above the Hansen outfall to the river and extends westward in a smaller canal (see **Figure 3.13**). At the south bank of the Poudre River, the Windsor Extension enters an inverted siphon that carries the water under the river and Highway 14 before surfacing at the point of release into the PVC.

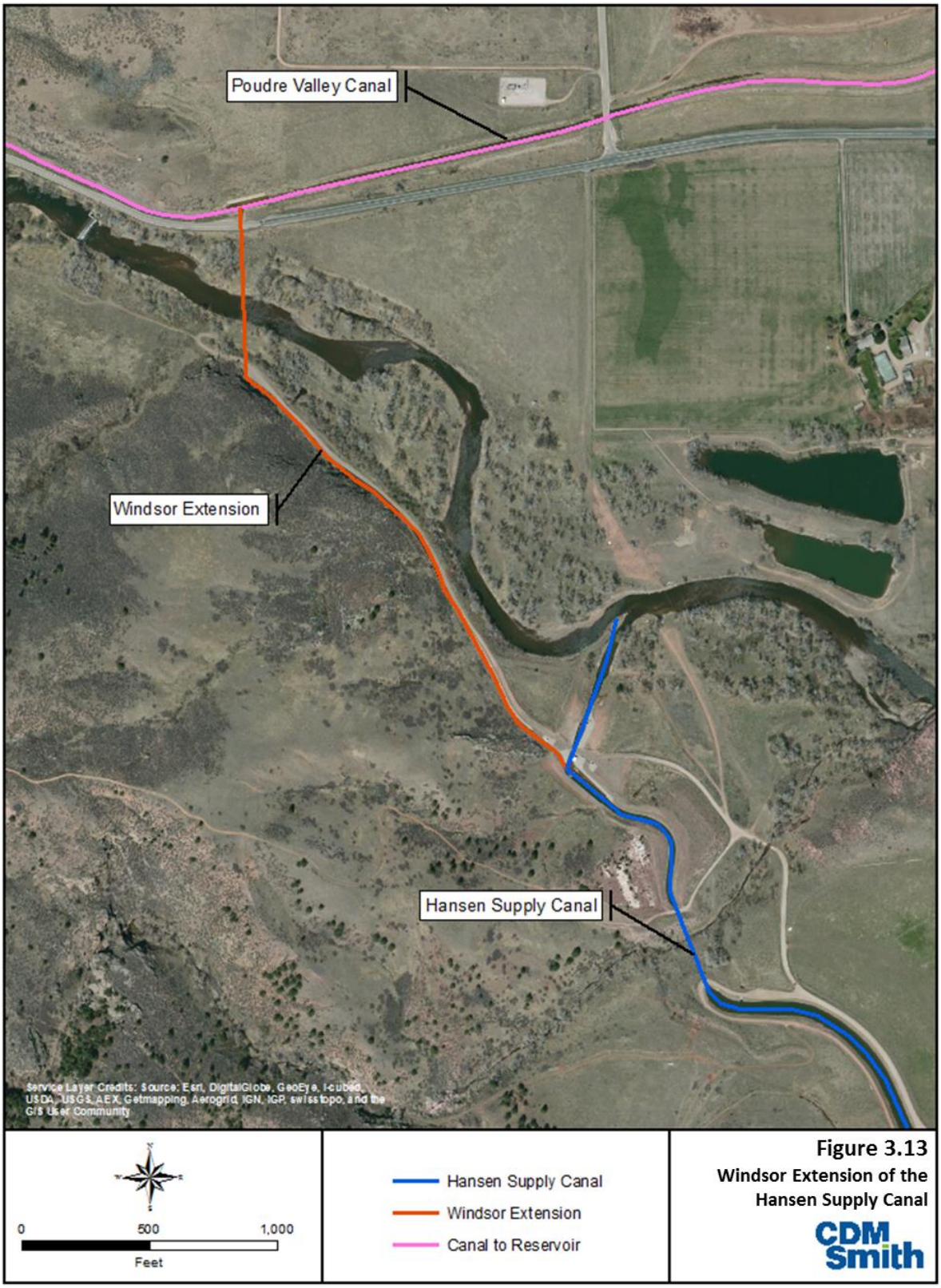


Figure 3.13
Windsor Extension of the Hansen Supply Canal

Under the Reclamation Contract Option for Alternative 2, Glade Reservoir releases may occasionally also be made to the PVC in lieu of Windsor Extension deliveries. Rather than flowing backwards (east-to-west) toward the Poudre River, this water would flow down (west-to-east) the PVC for storage in the reservoirs filled by the PVC. **Table 3.7** summarizes these releases of replacement C-BT water from Glade Reservoir to the PVC based on spreadsheet post-processing of model output from NISP Run 3a and NISP Run 4a.

Table 3.7. Glade Reservoir Releases to the PVC, Alternative 2, Reclamation Contract Option, IY 1950-2005

Month	Alternative 2 with Current Conditions Hydrology (NISP Run 3a)				Alternative 2 with Future Conditions Hydrology (NISP Run 4a)			
	Number of Years with Simulated NISP Releases (out of 56)	Min [AF]	Max [AF]	Avg [AF]	Number of Years with Simulated NISP Releases (out of 56)	Min [AF]	Max [AF]	Avg [AF]
November	0	0	0	0	0	0	0	0
December	0	0	0	0	0	0	0	0
January	0	0	0	0	0	0	0	0
February	0	0	0	0	0	0	0	0
March	0	0	0	0	0	0	0	0
April	0	0	0	0	0	0	0	0
May	0	0	0	0	0	0	0	0
June	0	0	0	0	0	0	0	0
July	0	0	0	0	0	0	0	0
August	0	0	0	0	0	0	0	0
September	0	0	0	0	0	0	0	0
October	6	0	6,000	130	15	0	9,200	430
ANNUAL	—	**0**	**6,000**	**130**	—	**0**	**9,200**	**430**

3.2.1.3 Simulated Glade Reservoir Storage Volume, Water Surface Area, Evaporation, and Water Surface Elevation

As a result of the simulated NISP diversions at PVC (storage inflows, see Section 3.1.1.2) and the reservoir releases to the Poudre River, PVC, and NISP Participants (storage outflows, see Section 3.2.1.2, Section 3.4.1, and Section 5), the Glade Reservoir storage volume would change over time. Water surface area and elevation are directly related to storage volume by the relationships shown in Figures 3.10 and 3.11 above, and evaporation from Glade Reservoir is directly related to the water surface area. The following sections summarize the results of these simulated Glade Reservoir properties.

Simulated Glade Reservoir Storage Volume

Figures 3.14 and 3.15 illustrate the simulated end-of-month (EOM) storage level in the proposed Glade Reservoir for the IY 1950-2005 study period, with current conditions and future conditions, respectively. Both the Reclamation No Contract Option (directly from NISP Run 3a and NISP Run 4a model output) and the Reclamation Contract Option (from spreadsheet post-processing of the model data) are shown in the figures.

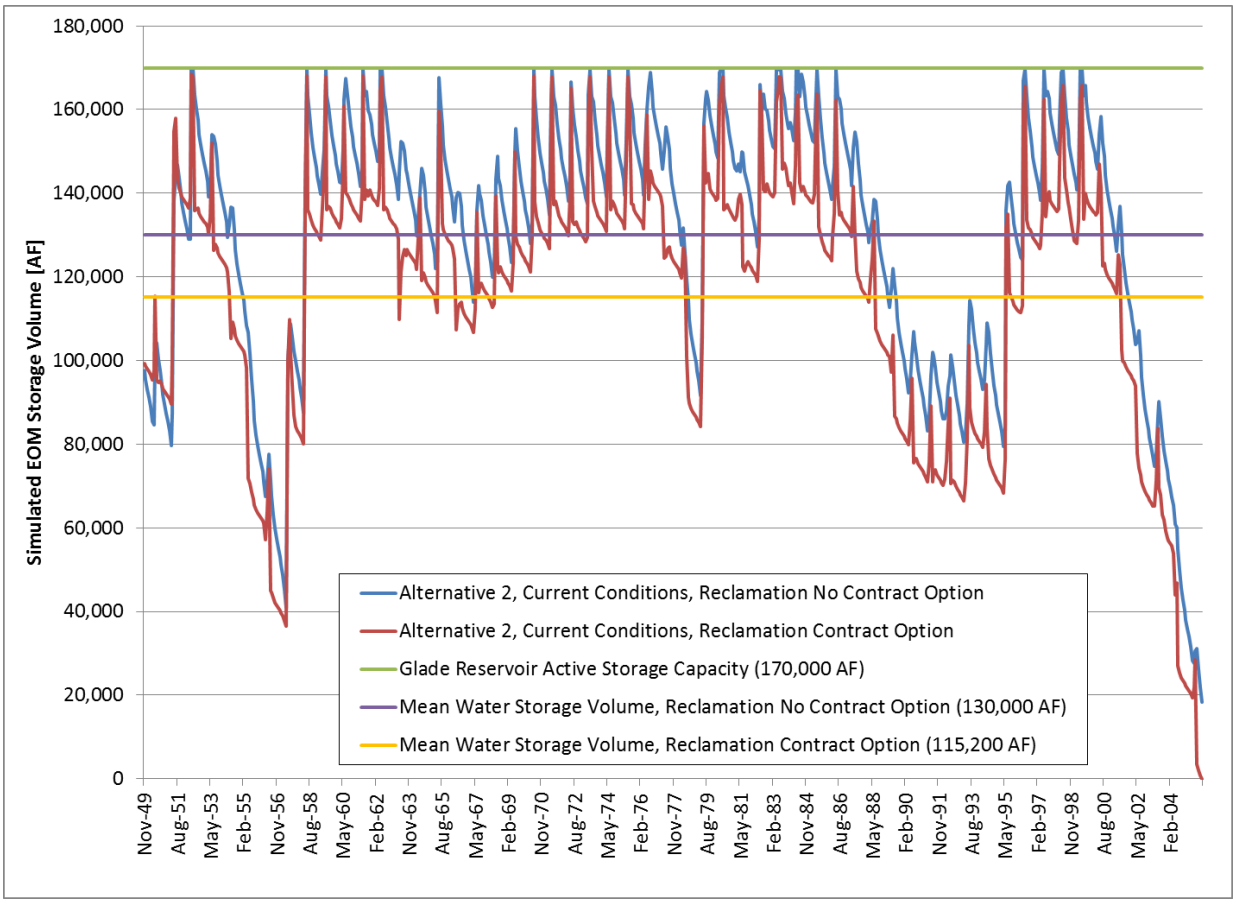


Figure 3.14 Glade Reservoir EOM Storage Volume, Alternative 2 with Current Conditions Hydrology, IY 1950-2005

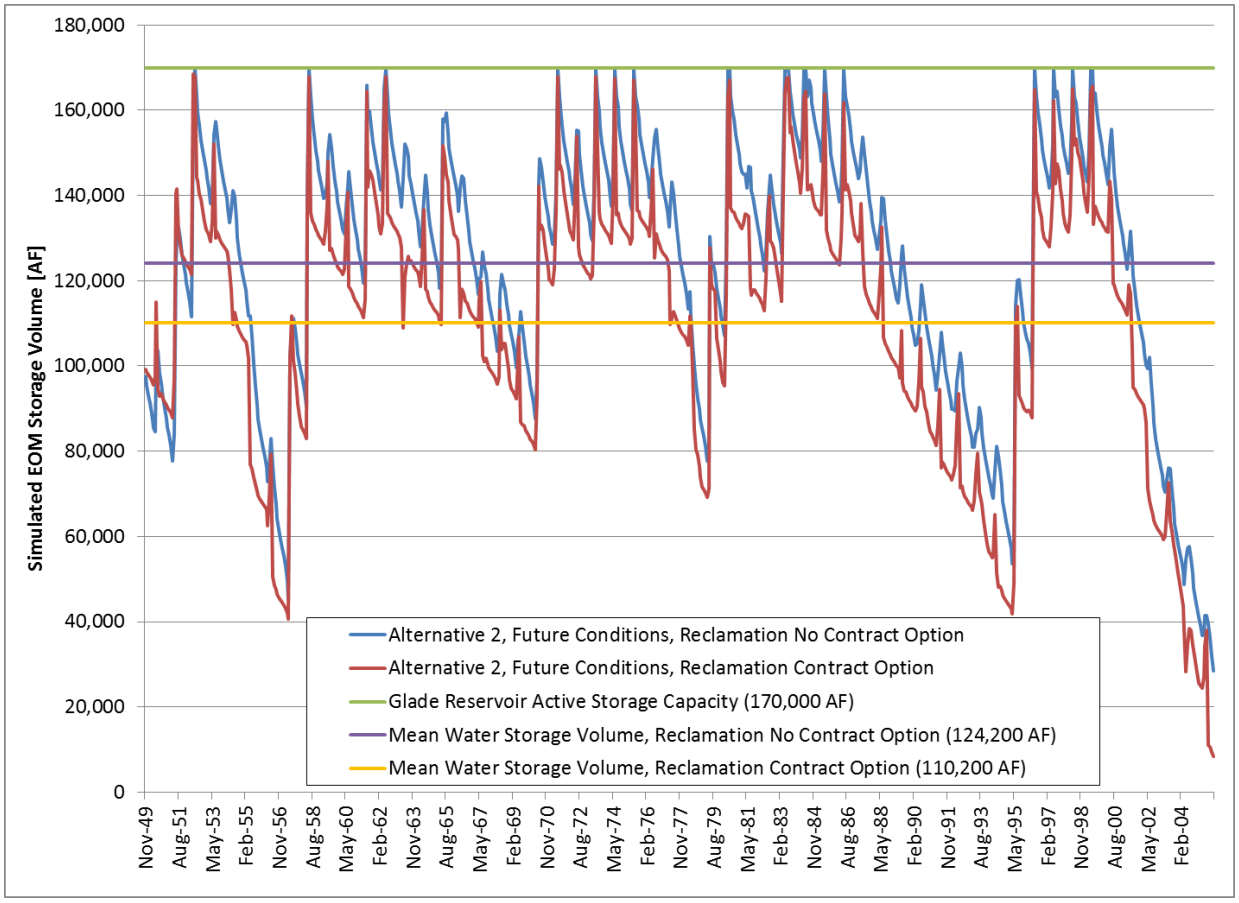


Figure 3.15 Glade Reservoir EOM Storage Volume, Alternative 2 with Future Conditions Hydrology, IY 1950-2005

Simulated Glade Reservoir Surface Area

Figures 3.16 and 3.17 show the estimated EOM water surface area for Glade Reservoir under current and future conditions, respectively, for both the Reclamation No Contract Option and the Reclamation Contract Option. Depending on the scenario, the mean (average) water surface area is estimated to range from 1,226 to 1,369 acres.

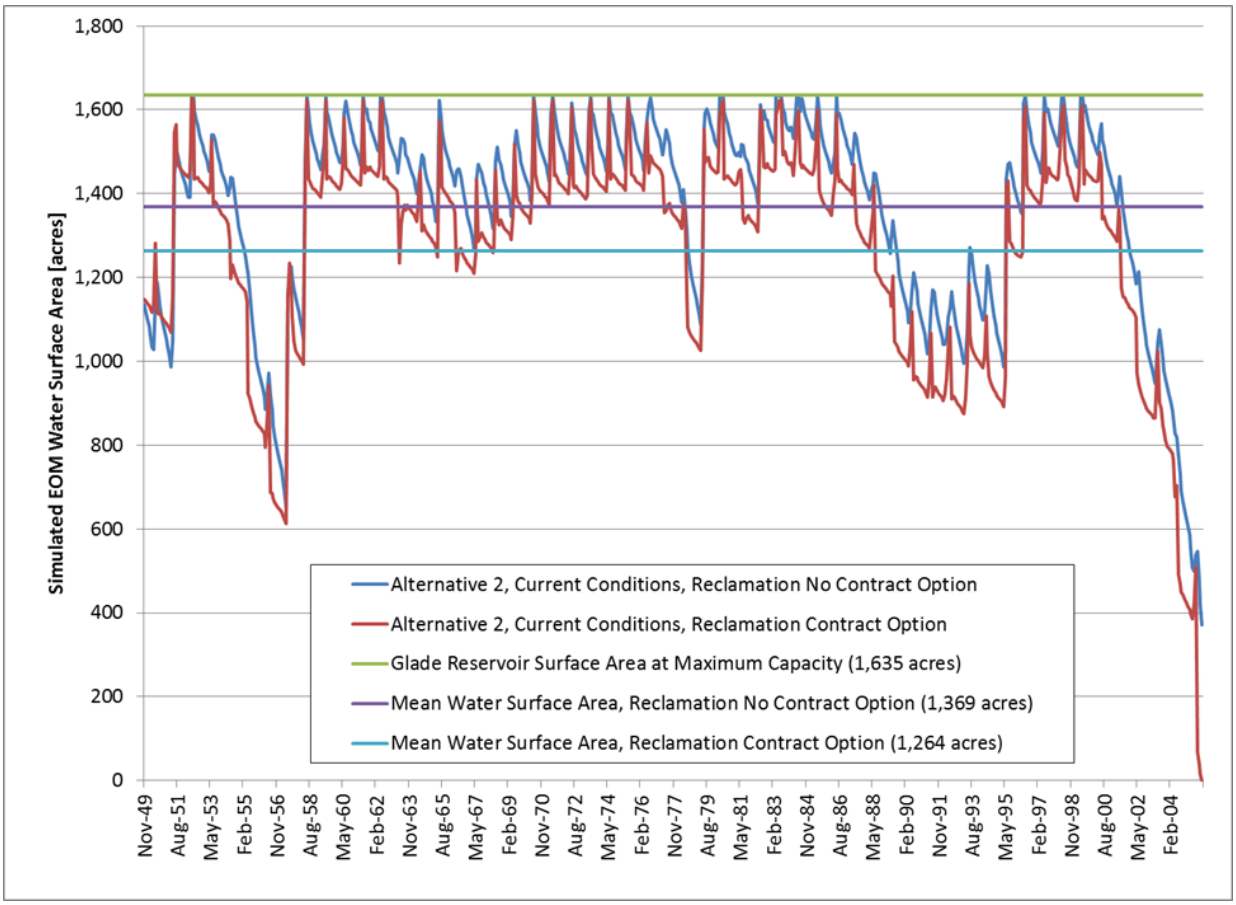


Figure 3.16 Glade Reservoir EOM Water Surface Area, Alternative 2 with Current Conditions Hydrology, IY 1950-2005

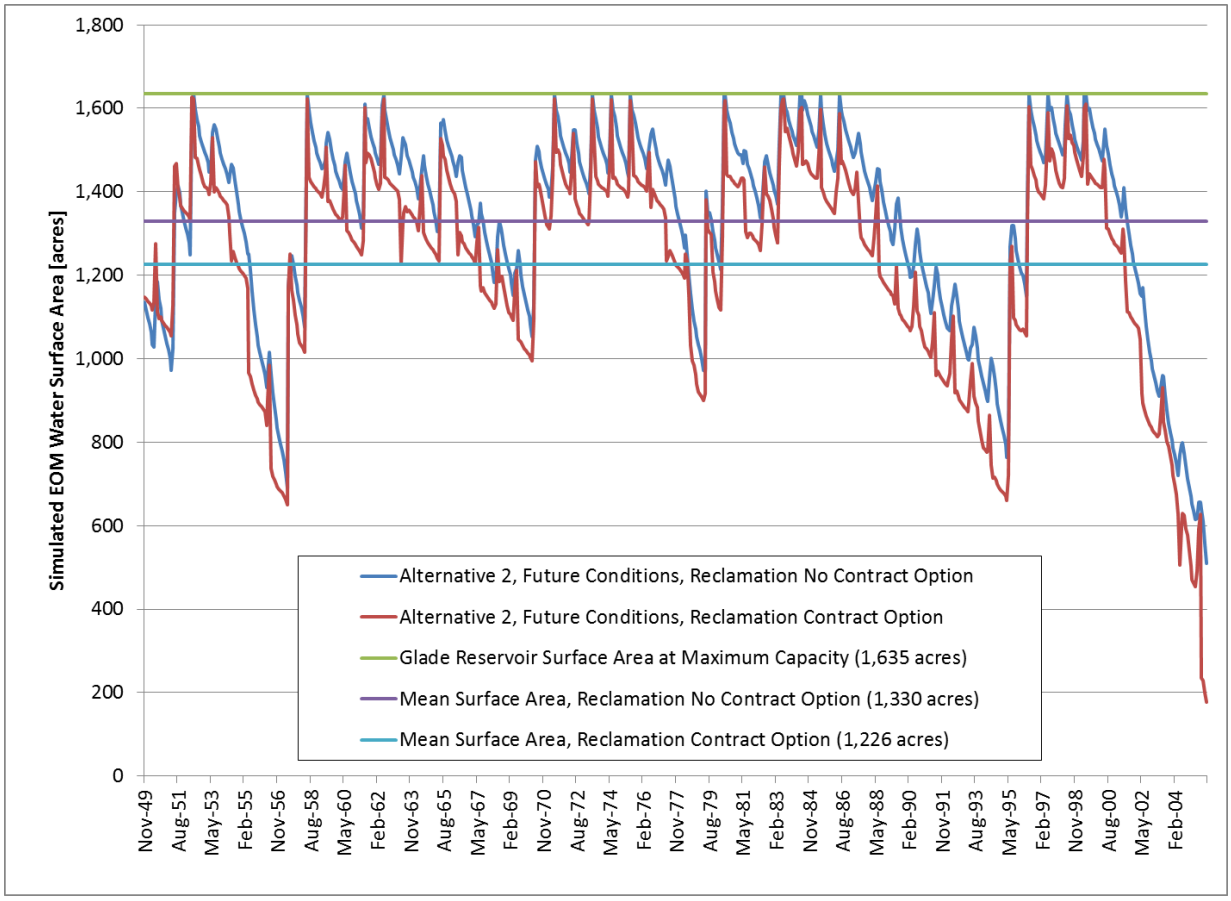


Figure 3.17 Glade Reservoir EOM Water Surface Area, Alternative 2 with Future Conditions Hydrology, IY 1950-2005

Simulated Glade Reservoir Evaporation

The methods for calculating Glade Reservoir evaporation are described in Section 2.6.2 and Section 7.4.1.1 of the *CTP Hydrologic Modeling Report* (CDM Smith and DiNatale Water Consultants 2013). **Figures 3.18 and 3.19** illustrate the simulated annual evaporation from Glade Reservoir based directly on NISP Run 3a and NISP Run 4a (Reclamation No Contract Option) and spreadsheet post-processing of model output from those same runs (Reclamation Contract Option). Estimates of average annual evaporation are as follows:

- Alternative 2, current conditions, Reclamation No Contract Option = 2,800 AF, about 2.2 percent of the 130,000 AF average storage volume shown in Figure 3.13
- Alternative 2, current conditions, Reclamation Contract Option = 2,600 AF, about 2.3 percent of the 115,200 AF average storage volume shown in Figure 3.13
- Alternative 2, future conditions, Reclamation No Contract Option = 2,700 AF, about 2.2 percent of the 124,200 AF average storage volume shown in Figure 3.14
- Alternative 2, future conditions, Reclamation Contract Option = 2,500 AF, about 2.3 percent of the 110,200 AF average storage volume shown in Figure 3.14

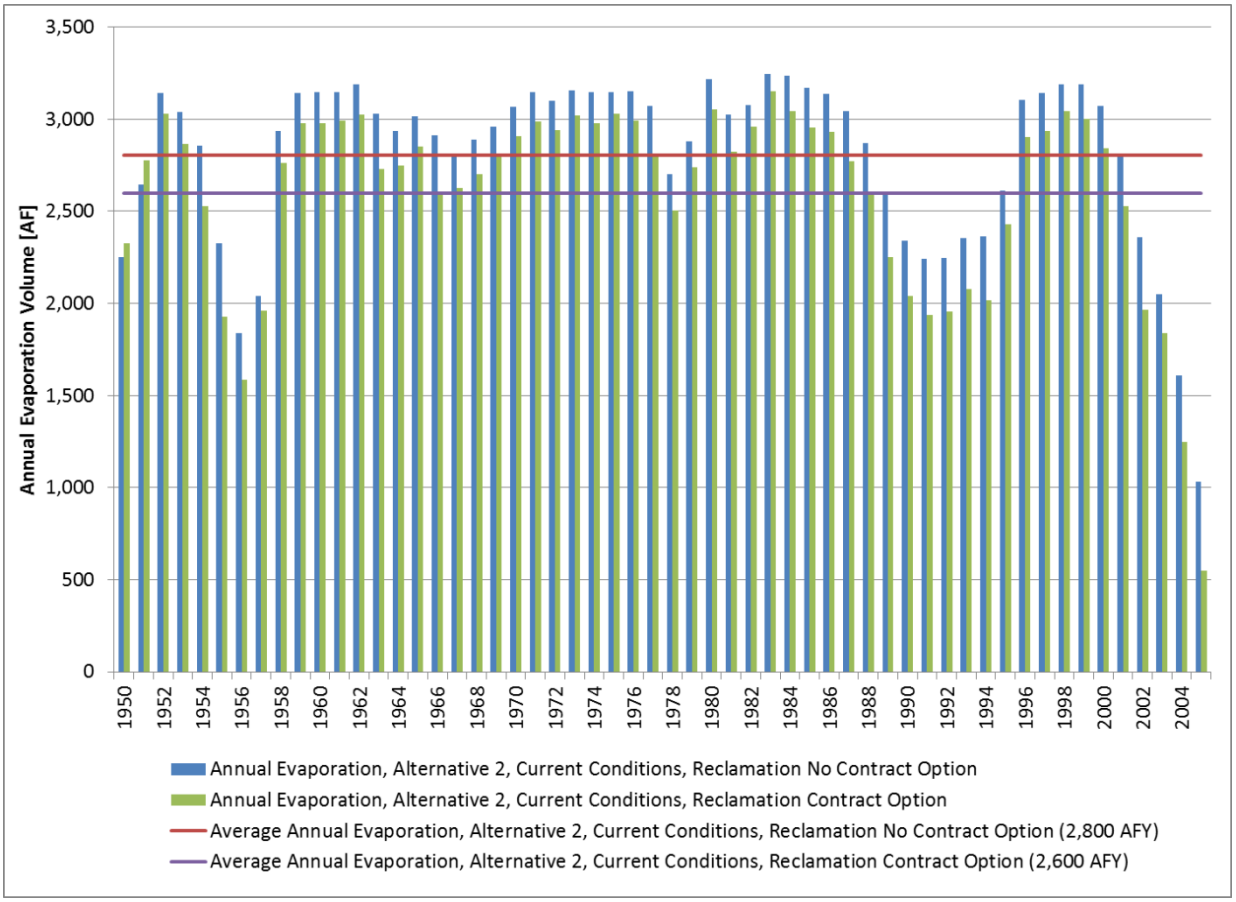


Figure 3.18 Glade Reservoir Evaporation, Alternative 2 with Current Conditions Hydrology, IY 1950-2005

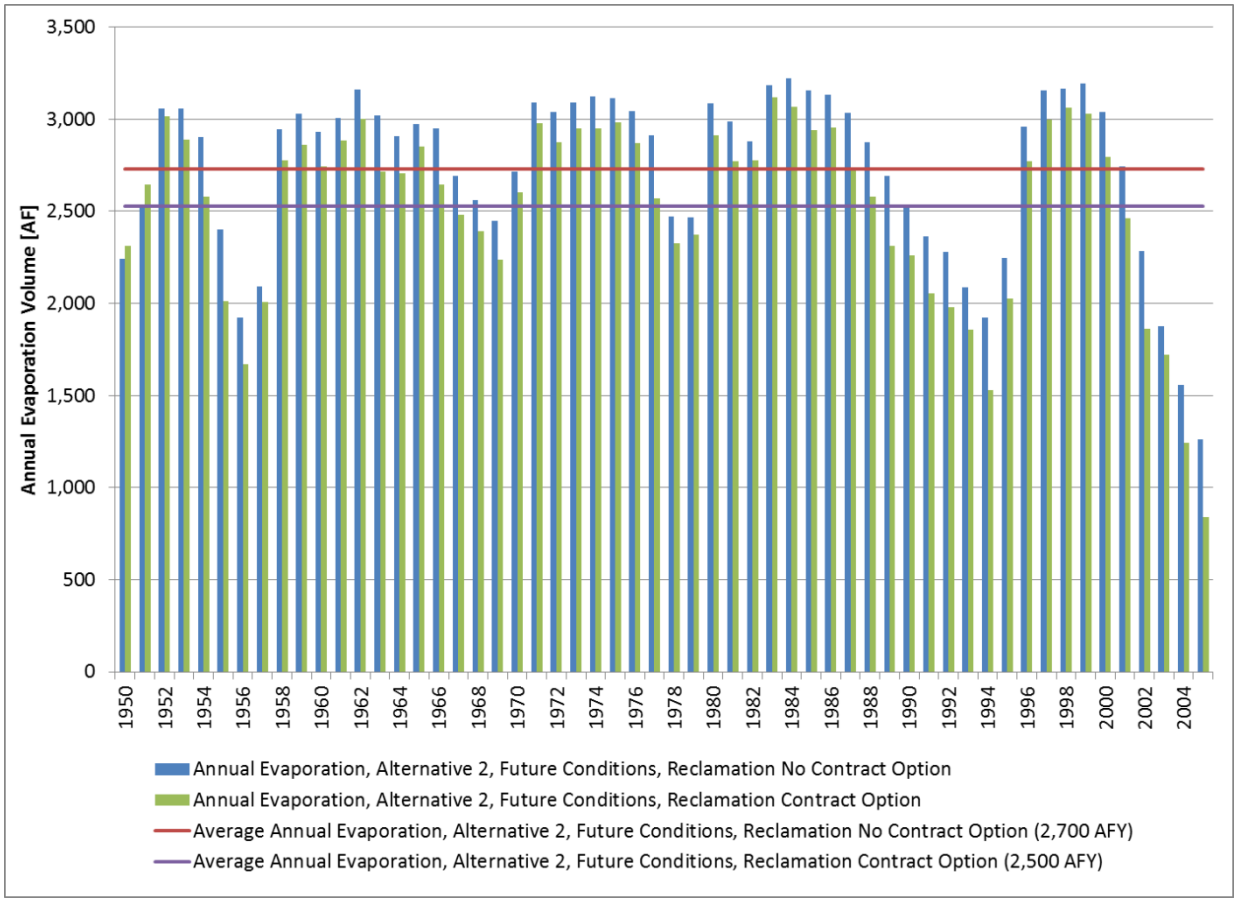


Figure 3.19 Glade Reservoir Evaporation, Alternative 2 with Future Conditions Hydrology, IY 1950-2005

Simulated Glade Reservoir Water Surface Elevation

Figures 3.20 and 3.21 show the EOM WSEL for Glade Reservoir, calculated from the EOM storage volumes shown previously in Figures 3.14 and 3.15 and the storage-elevation relationship shown in Figure 3.11.

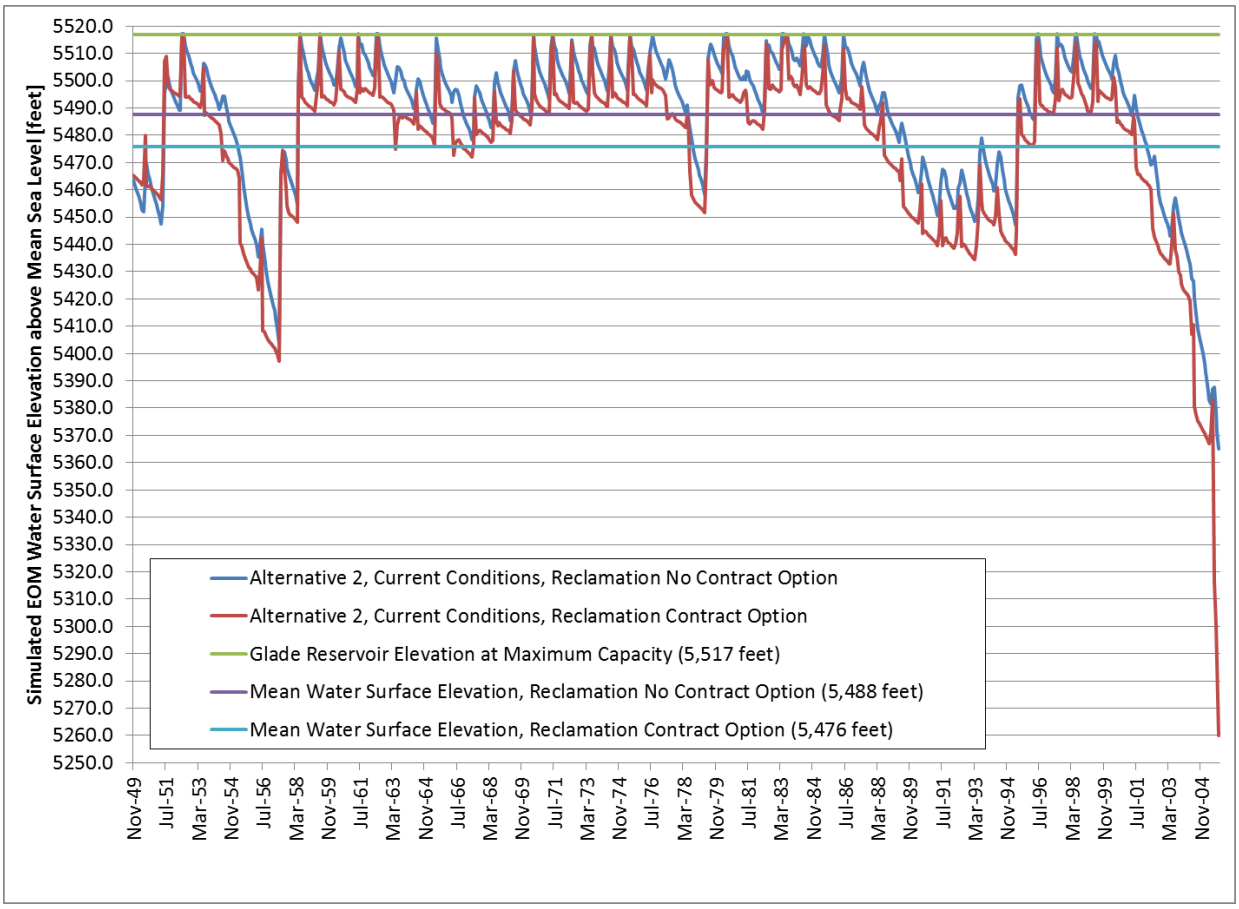


Figure 3.20 Glade Reservoir EOM Water Surface Elevation, Alternative 2 with Current Conditions Hydrology, IY 1950-2005

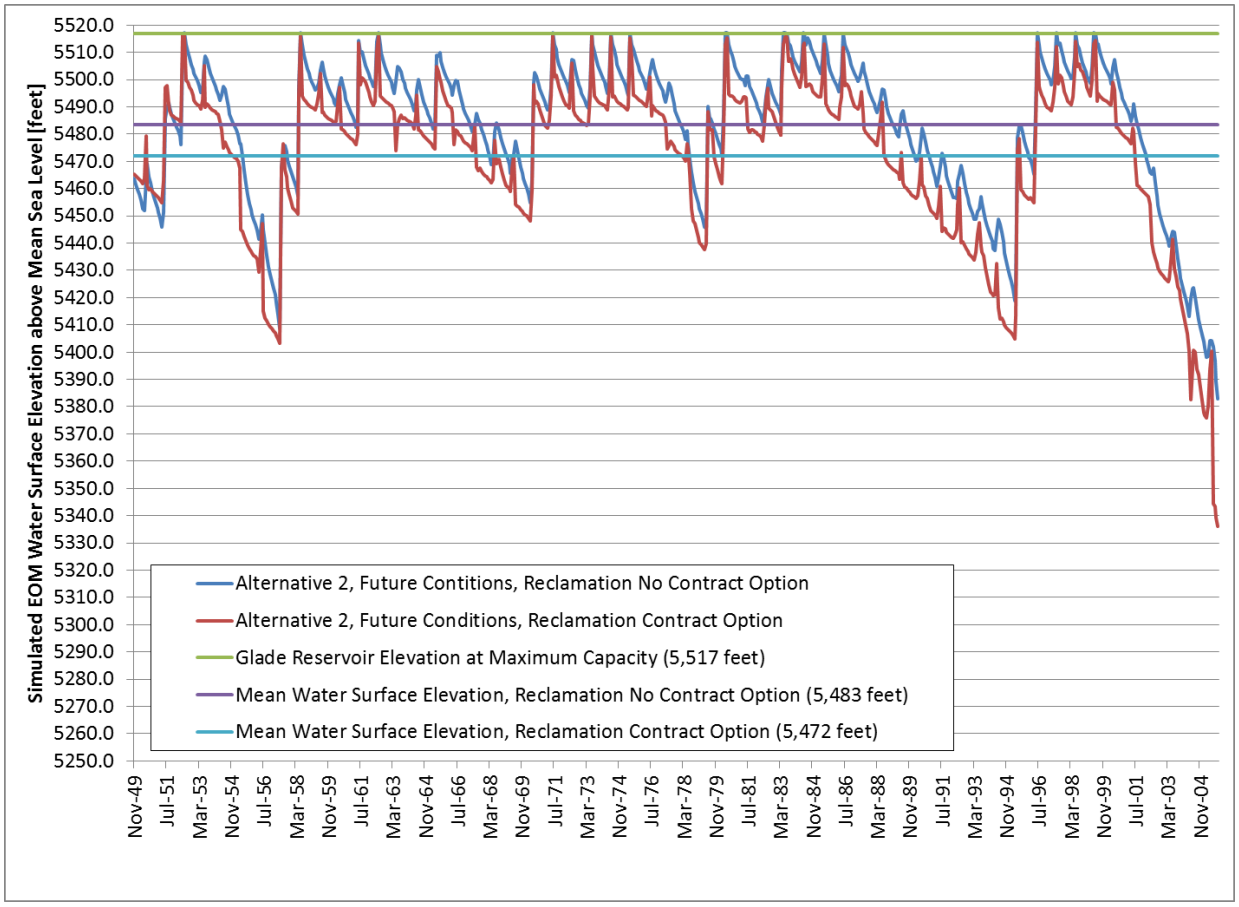


Figure 3.21 Glade Reservoir EOM Water Surface Elevation, Alternative 2 with Future Conditions Hydrology, IY 1950-2005

The changes in Glade Reservoir WSEL from month-to-month—particularly drawdown rates—would have implications for recreation at the reservoir. Figures illustrating the monthly elevation changes are included in Appendix A. **Table 3.8** summarizes the maximum monthly WSEL increase and drawdown for each of the Alternative 2 scenarios. Note that as observed in the EOM storage volume, water surface area, and WSEL plots, there is an extreme drawdown (as high as 60-70 feet/month) shown in the last 4 months of the study period (July-October 2005); because this scenario is highly unlikely to actually occur[5], these data points were excluded from Table 3.8.

[5] Modeling of the NISP alternatives assumes delivery of full project yield in all years of the study period. During a drought period similar to that of the early 2000s—which was a more extreme event than the drought of the mid-1950s used to define NISP reliability criteria (see Section 1.5.1.4 of the *CTP Hydrologic Modeling Report* [CDM Smith and DiNatale Water Consultants 2013])—project Participants would monitor storage and implement water use restrictions to maintain storage at levels appropriate for making the stored water supply last through extended drought.

Table 3.8. Estimated Range of Monthly Change in Elevation for Glade Reservoir

Scenario	Maximum Elevation Increase [feet/month]	Maximum Elevation Decrease (Drawdown) [feet/month]
Alternative 2, Current Conditions, Reclamation No Contract Option	62.6	-6.2
Alternative 2, Current Conditions, Reclamation Contract Option	68.2	-34.1
Alternative 2, Future Conditions, Reclamation No Contract Option	59.3	-5.7
Alternative 2, Future Conditions, Reclamation Contract Option	64.0	-32.1

Under the Reclamation No Contract Option, monthly drawdowns are mostly in the 0-5 feet/month range. Monthly drawdowns in the 10-15 feet/month range are common under the Reclamation Contract Option. For example, results based on NISP Run 3a (Alternative 2 with 2010 current conditions hydrology) show 54 months (out of 672 months in the IY 1950-2005 study period) with drawdowns of 10 feet/month or greater, of which 40 occurrences are in the month of July. For NISP Run 4a (Alternative 2 with 2050 future conditions hydrology), 35 of 44 months with drawdown greater than 10 feet/month are in the month of July. This trend in the modeled operations of Glade Reservoir is attributable to large volumes[6] of water that would be released to the Poudre River as part of the proposed exchange with C-BT, in lieu of Hansen Supply Canal releases. For further information, including comparison of water level changes in Glade Reservoir to those in Horsetooth Reservoir, see the recreation sections of the *Socioeconomics Resources Effects Report* (BBC 2014).

3.2.2 Galeton Dam and Reservoir

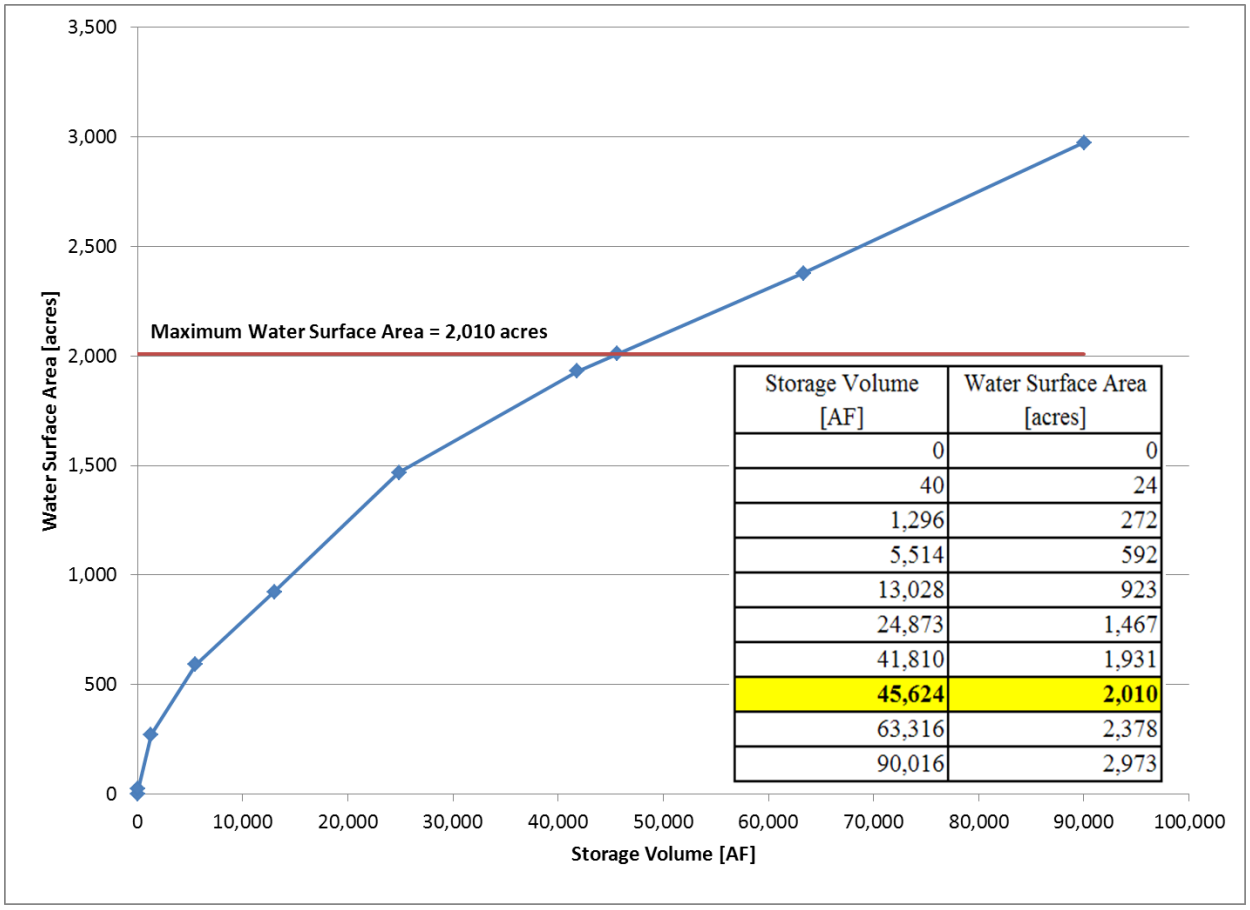
The proposed Galeton Reservoir would have a maximum active storage capacity of 45,624 AF; this volume represents the upper limit of Galeton Reservoir storage under the District's SPWCP conditional water rights (Consolidated Case No. 92CW130) with a December 11, 1992 priority. An additional amount of inactive capacity of up to 3,000 AF may be included pending the outcome of the final mitigation plan and final design. The proposed maximum capacity of 45,624 AF represents an increase of 5,624 AF over the Galeton Reservoir maximum capacity of 40,000 AF proposed in the NISP DEIS (Corps 2008); this change was proposed in order to maximize beneficial use of the 1992-priority storage rights. The mean depth of Galeton Reservoir would be about 46 feet and maximum depth would be 57 feet. The estimated hydraulic residence time would be 1.6 years.

GEI (2006b) described several elements of the Galeton Dam and Reservoir, summarized below:

- The Galeton Reservoir site is 36 miles east and slightly south of the Glade Reservoir site
- The Galeton Reservoir basin at 40,000 AF is roughly 2 miles wide at its maximum and just over 2 miles long
- The Galeton Dam axis trends southwest to northeast across an unnamed drainage, and the dam crest would be approximately 9,800 feet long
- The dam crest would have a minimum width of 25 feet, and a height above the downstream toe of approximately 75 feet

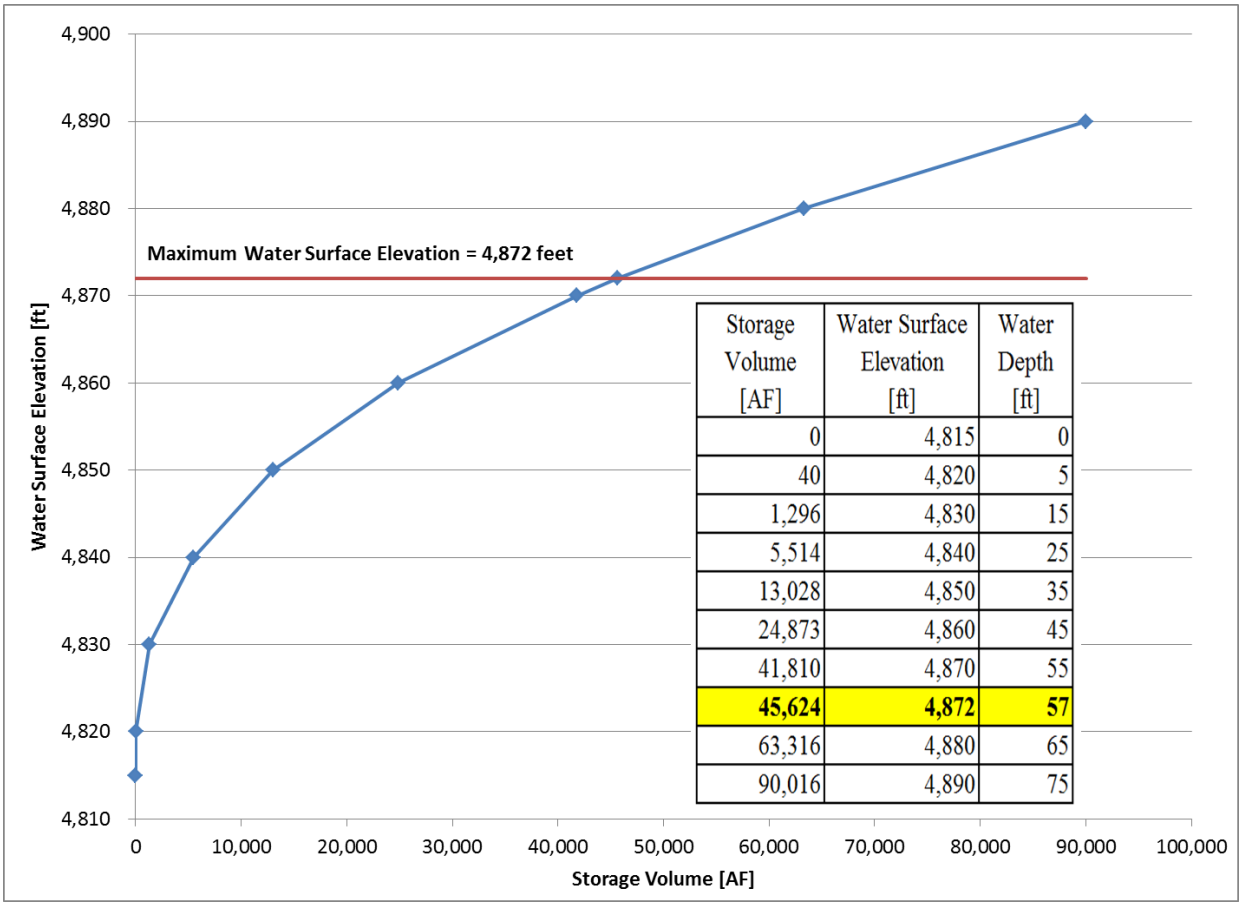
[6] Based on spreadsheet post-processing of model data for the Reclamation Contract Option for Alternative 2 with current conditions, 41 of 56 Julys show Glade Reservoir releases to the Poudre River ranging from 10,000 AF/month to nearly 30,000 AF/month. With future conditions, 33 of 56 Julys have Glade Releases in this range.

Figures 3.22 and 3.23 provide the storage-area and storage-elevation relationships for the proposed Galeton Reservoir. At the proposed maximum active capacity of 45,624 AF, Galeton Reservoir would have a surface area of 2,010 acres (3.1 square miles) and a WSEL of 4,872 feet above mean sea level (±5 feet, subject to detailed survey and final design).



Storage Volume [AF]	Water Surface Area [acres]
0	0
40	24
1,296	272
5,514	592
13,028	923
24,873	1,467
41,810	1,931
45,624	**2,010**
63,316	2,378
90,016	2,973

Figure 3.22 Storage-Area Relationship for the Proposed Galeton Reservoir



Storage Volume [AF]	Water Surface Elevation [ft]	Water Depth [ft]
0	4,815	0
40	4,820	5
1,296	4,830	15
5,514	4,840	25
13,028	4,850	35
24,873	4,860	45
41,810	4,870	55
45,624	**4,872**	**57**
63,316	4,880	65
90,016	4,890	75

Figure 3.23 Storage-Elevation Relationship for the Proposed Galeton Reservoir

GEI (2006b) provides a feasibility-level description of the inlet/outlet works for the proposed Galeton Reservoir:

> The inlet/outlet works would consist of the following components: an inlet/outlet tower structure, a concrete encased steel inlet/outlet pipe, a drop inlet spillway in a separate chamber of the tower, a second concrete-encased steel conduit to handle service spillway and emergency drawdown flows, and terminal facilities consisting of an impact basin for spillway and drawdown releases to the creek and a valve control building or vault to handle operational flows into and out of the reservoir. The impact basin structure will discharge into the natural drainage downstream of the dam. The service spillway from the dry chamber of the tower to the impact basin will be ungated to meet [State Engineer's Office] SEO requirements for service spillways.

The spillway and drawdown conduit would be 96-inch-diameter steel pipe, approximately 450 feet long, and would release to the creek below the dam. The outlet works conduit would consist of 66-inch-diameter steel pipe approximately 1,500 feet long to the control building (GEI 2006b).

Figure 3.24 shows the simulated EOM storage volume in the proposed Galeton Reservoir for the IY 1950-2005 study period with both current and future baseline conditions. Galeton Reservoir operations are anticipated to be the same for both the Reclamation No Contract Option and the Reclamation Contract Option; therefore, those two scenarios are not shown separately in the figure.

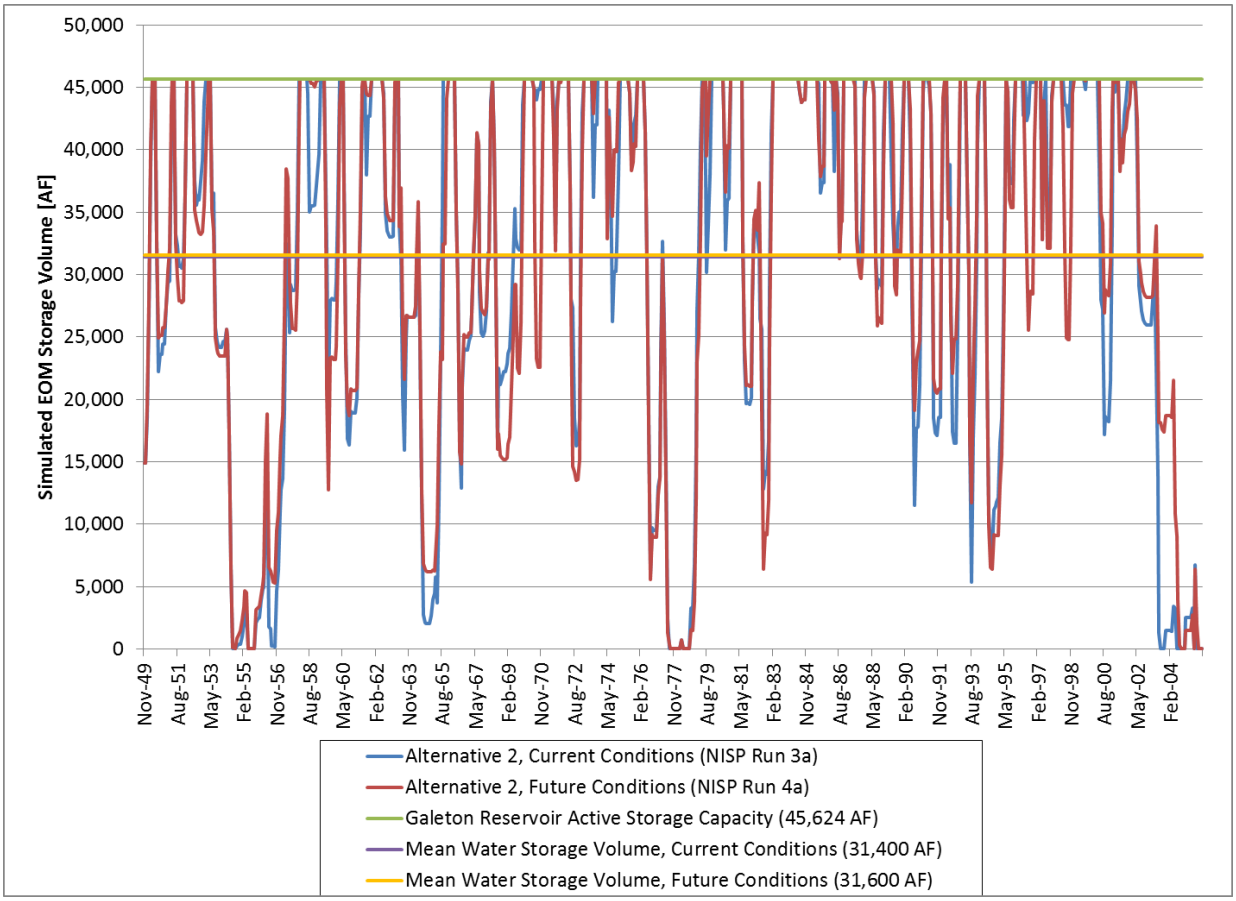


Figure 3.24 Galeton Reservoir EOM Storage Volume, Alternative 2 with Current Conditions (NISP Run 3a) and Future Conditions (NISP Run 4a), IY 1950-2005

Figures illustrating estimated Galeton Reservoir EOM water surface area, annual evaporation, and EOM WSEL are included in Appendix B. Mean water surface area and average annual evaporation are summarized below for Alternative 2 with 2010 current conditions hydrology (NISP Run 3a) and 2050 future conditions hydrology (NISP Run 4a).

- Galeton Reservoir estimated mean surface area
  - Current conditions = 1,538 acres
  - Future conditions = 1,557 acres

- Galeton Reservoir estimated average annual evaporation
  - Current conditions = 4,000 AFY (12.7 percent of 31,400 AF average storage)
  - Future conditions = 4,000 AFY (12.7 percent of 31,600 AF average storage)

3.3 Alternative 2 – Other Conveyance

Several other proposed pipelines are required or may be required to facilitate the operation of Alternative 2, including the Carter Pipeline, the SPWCP Larimer Weld and New Cache delivery pipelines, and the Munroe Canal Bypass. Alternative 2 would also require the use of some existing C-BT infrastructure and the existing SWSP in order to make deliveries to those NISP Participants located in the southern and eastern areas of the District. This existing C-BT infrastructure is owned and operated by the District and would be used to deliver water under either the Reclamation Contract Option or the Reclamation No Contract Options. These various conveyance mechanisms are described in the following sections. The proposed Glade-to-Horsetooth Pipeline is discussed in Section 3.4.1 in the context of changes to C-BT operations.

3.3.1 Carter Pipeline

Under the Reclamation No Contract Option for Alternative 2, NISP water would be delivered to the project Participants via the proposed Carter Pipeline and existing pipelines. The Reclamation Contract Option for Alternative 2 does not require a Carter pipeline. As it is depicted in **Figure 3.25**, the Carter Pipeline would extend about 31 miles from the proposed Glade Reservoir south, around the east side of Horsetooth Reservoir, and then further south to Carter Lake where it would tie into the existing SWSP (Corps 2008, page 3-37) and the existing St. Vrain Supply Canal. Turnouts from the Carter Pipeline would provide water to Evans at the Bellvue Filter Plant; to Eaton, Severance, and Windsor at the Tri-Districts' Soldier Canyon Filter Plant; and to most other NISP Participants by the tie-in to existing C-BT and SWSP infrastructure owned by the District below Carter Lake. Under Alternative 2, Participant FCLWD would utilize its own capacity in the existing Pleasant Valley Pipeline (PVP) by a direct connection from Glade Reservoir. This description of conveyance through the proposed Carter Pipeline is conceptual in nature; the exact routing and sizing of the pipeline is subject to revision and refinement based on final design and routing analyses. Future changes to the routing and sizing of the pipeline would have no effect on the hydrologic modeling results presented in this report.

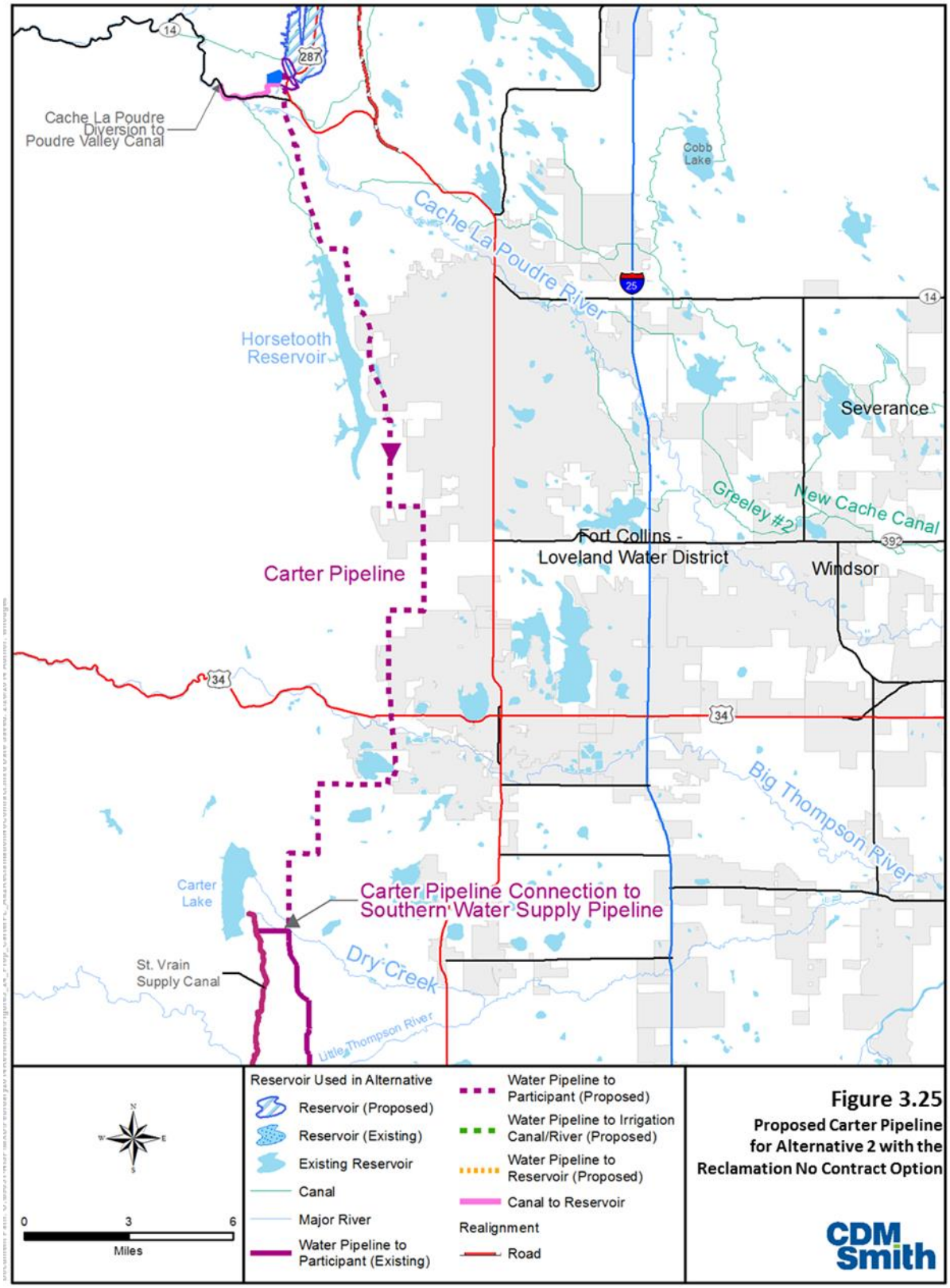


Figure 3.25
Proposed Carter Pipeline for Alternative 2 with the Reclamation No Contract Option

3.3.2 SPWCP Larimer Weld and New Cache Pipelines

Proposed new pipelines would deliver water directly from the South Platte River and/or released from Galeton Reservoir to the Larimer and Weld Canal and the New Cache Canal as part of the proposed SPWCP exchanges for NISP. NISP DEIS documentation and other past documentation of the SPWCP described the pipelines as having three turn-outs delivering a sum total of up to 100 cfs to each canal. The most recent SPWCP documentation by GEI and Integra (2010b) revised this configuration such that the pipeline to Larimer Weld and the pipeline to New Cache would each have only one turn-out delivering a sum total of up to 100 cfs to each canal. Both turnouts would be located just east of Highway 85, as shown on the map in **Figure 3.26**. The locations of the turnouts in Figure 3.26 are the farthest east that the turnouts would be located. While the present configuration assumes a single turnout to each canal, the final number (single or multiple) and location(s) of turnouts would be subject to negotiations with the ditch companies; any changes in the location(s) of the turnout(s) will be determined prior to the Final EIS for NISP. Delivery of water to the Larimer and Weld Canal would require a pumping station located near Galeton Reservoir. This station would have a maximum capacity of 100 cfs. The pipeline from Galeton Reservoir to the Larimer and Weld Canal Pumping Station would require approximately 350 feet of 51-inch suction piping from the Galeton Reservoir 96-inch diameter inlet/outlet pipeline. From the outlet of the pumping station, approximately 52,370 feet of 51-inch pipe would deliver up to 100 cfs flow capacity to the Larimer and Weld Canal turn-out east of Highway 85, near the intersection of Weld County Roads (WCR) 37 and 80 (GEI and Integra 2010b).

Delivery of 100 cfs to the New Cache Canal could be accomplished by gravity flow releases from Galeton Reservoir or while water is being pumped from the SPWCP South Platte River diversion to Galeton Reservoir. The New Cache Canal turn-out would be supplied by the 68-inch diameter pipeline from the South Platte diversion to Galeton Reservoir and through approximately 22,360 feet of 48-inch pipeline that would branch off the 68-inch diameter pipeline (GEI and Integra 2010b).

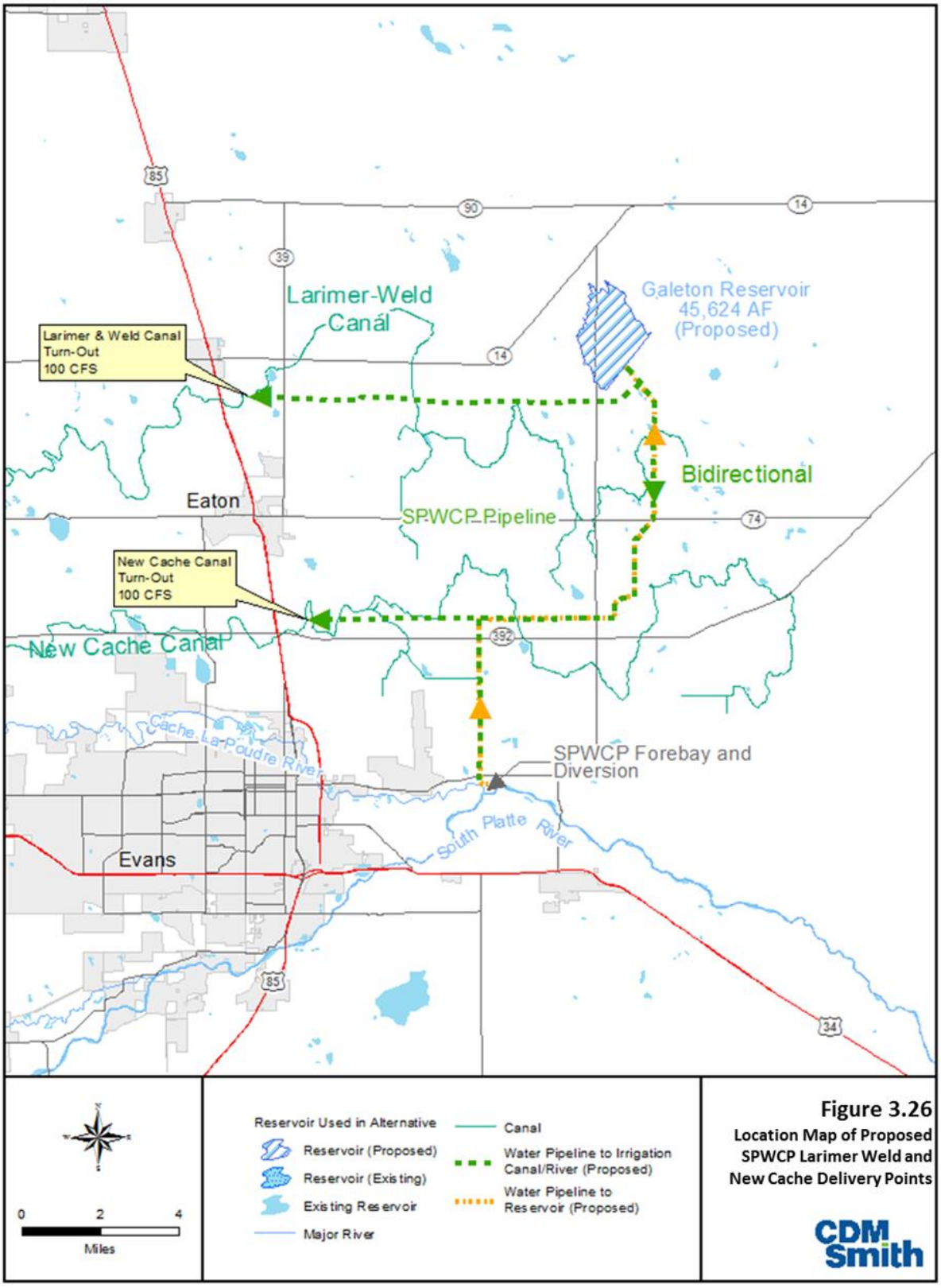


Figure 3.26
Location Map of Proposed SPWCP Larimer Weld and New Cache Delivery Points

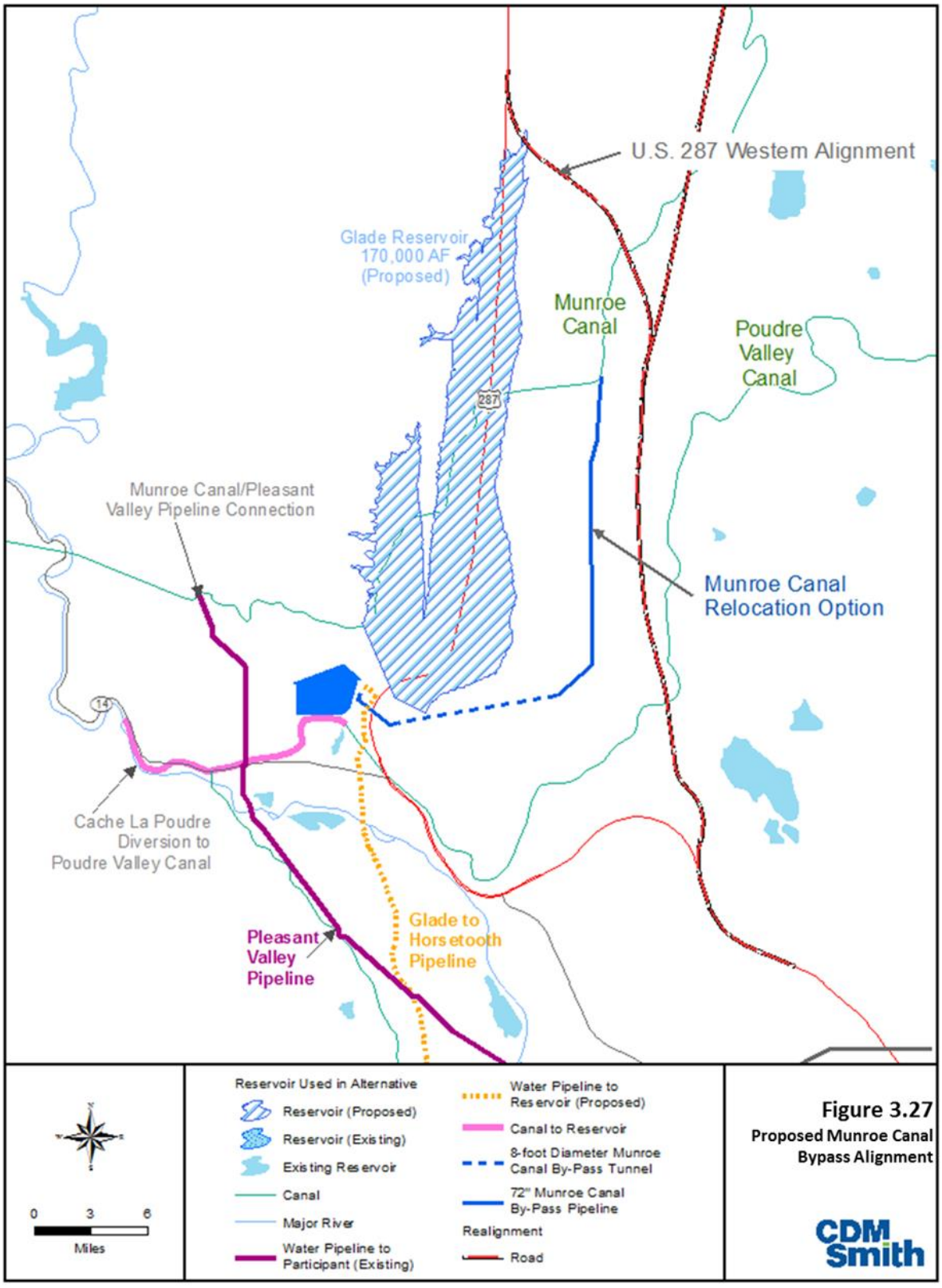
3.3.3 Munroe Canal Bypass

Construction of Glade Reservoir would inundate a segment of the existing Munroe Canal. As a result, it would be necessary to build a bypass around Glade Reservoir (**Figure 3.27**) in order to not interfere with Munroe Canal operations and delivery of water to NPIC shareholders.

GEI and Integra (2005c) completed an alternatives analysis for the Munroe Canal bypass; this analysis was updated by GEI and Integra (2010a), as follows:

> The Munroe Canal Bypass will convey flows of up to 100 cfs by gravity and flows up to 250 cfs via the dual-purpose Munroe Bypass pumps located in the Glade Pumping Station…The Munroe Canal Bypass also includes:
>
> - Approximately 2,500 feet of Munroe Canal improvements
> - 1,550 feet of riprap channel from an emergency overflow structure at the Munroe Canal to the Glade Forebay and an impact basin at the Glade Forebay
> - 2,600 feet of 72-inch pipe from an operational turn-out structure at the Munroe Canal to the Glade Pumping Station
> - Approximately 2,300 feet of 72-inch pipe from the Glade Pumping Station to a lined-tunnel
> - Approximately 6,650 feet of 8-foot diameter lined-tunnel
> - Approximately 13,750 feet of 72-inch pipe from the end of the tunnel to a transition structure tying into the existing Munroe Canal

The structures associated with the proposed Munroe Canal bypass are also depicted in figures in GEI and Integra (2010a), which are included in the appendices of this technical report.


U.S. 287 Western Alignment
Glade Reservoir
170,000 AF
(Proposed)
Munroe
Canal
Poudre
Valley
Canal
287
Munroe Canal/Pleasant
Valley Pipeline Connection
Munroe Canal
Relocation Option
14
Cache La Poudre
Diversion to
Poudre Valley Canal
Pleasant
Valley
Pipeline
Glade to
Horsetooth
Pipeline
0 3 6
Miles
Reservoir Used in Alternative
Reservoir (Proposed)
Reservoir (Existing)
Existing Reservoir
Canal
Major River
Water Pipeline to
Participant (Existing)
Water Pipeline to
Reservoir (Proposed)
Canal to Reservoir
8-foot Diameter Munroe
Canal By-Pass Tunnel
72" Munroe Canal
By-Pass Pipeline
Realignment
Road
Figure 3.27
Proposed Munroe Canal
Bypass Alignment
CDM
Smith

3.3.4 Existing C-BT Delivery Infrastructure and the Southern Water Supply Pipeline

The District is the owner of all C-BT distribution facilities downstream of Horsetooth Reservoir and Carter Lake, including the St. Vrain Supply Canal, the Boulder Feeder Canal, the Munroe Canal, and other existing conveyance structures. The District also owns the SWSP, which is used to deliver C-BT water to some C-BT users south and east of Carter Lake. Under the Reclamation Contract Option, NISP water for Participants Erie, Lafayette, Fort Lupton, Fort Morgan, MCQWD, Frederick, Firestone, Dacono, CWCWD, and LHWD would be released from the Carter Lake outlet works at Dam #1 into the existing St. Vrain Supply Canal. Existing infrastructure facilitates year-round deliveries from Carter Lake.

Under the Reclamation No Contract Option, NISP water deliveries would be made to the St. Vrain Supply Canal just below Dam #1. Intake structures for CWCWD's existing water treatment facility and the existing SWSP are located 1/2-mile below the Dam #1 outlet works. From this location, CWCWD distributes treated water to its customers as well as to Frederick, Firestone, and Dacono. The SWSP delivers raw water to Erie, Fort Lupton, Fort Morgan, and MCQWD.

The St. Vrain Supply Canal distributes raw water that ultimately reaches LHWD, Erie, and Lafayette via existing water infrastructure depicted in **Figure 3.28** below. South of St. Vrain Creek, the St. Vrain Supply Canal becomes the Boulder Feeder Canal, which supplies water to Boulder Reservoir. The canal segment below the outlet of Boulder Creek is known as the Boulder Creek Supply Canal, and it delivers water to Boulder Creek. Erie has a new pipeline to divert water from the Boulder Creek Supply Canal, and Lafayette has a diversion structure to take water from Boulder Creek.

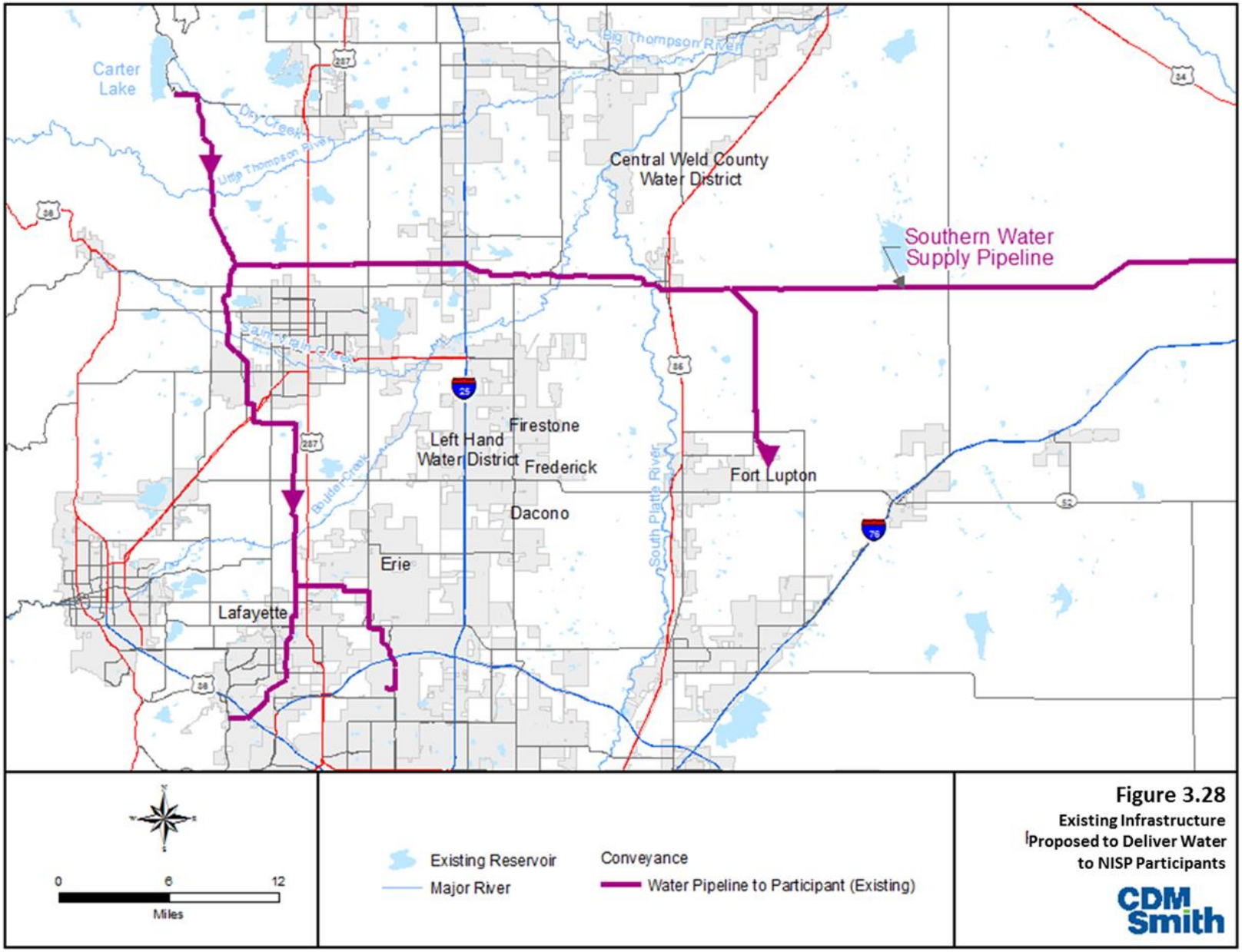


Figure 3.28
Existing Infrastructure Proposed to Deliver Water to NISP Participants

3.4 Anticipated Changes to C-BT Project Operations Associated with Alternative 2

For NISP Alternative 2 only, the Reclamation Contract Option (see Section 2.1.3.1) involves interactions between proposed NISP operations and infrastructure and existing C-BT Project operations and infrastructure. The District proposes to enter into a contract with Reclamation for the delivery of NISP water out of Carter Lake Reservoir. While the final amount of this exchange would be subject to final Reclamation contract negotiations, for the purposes of the EIS analysis, an average case has been included and is described in the following paragraphs.

The exchange with C-BT would allow an average of 29,500 AFY to be delivered from the outlet of Carter Lake to the 10 NISP Participants located in the southern and eastern areas of the District. The remaining 10,500 AFY of NISP firm yield for Participants Evans (1,600 AFY), FCLWD (3,000 AFY), and Eaton, Severance, and Windsor (5,900 AF) is not anticipated to be delivered via C-BT facilities under the Reclamation Contract Option (see section 5.1.1.1). All NISP action alternatives scenarios are expected to utilize existing C-BT canals south of Carter Lake and the existing SWSP to deliver water to the NISP Participants located in the southern and eastern areas of the District (see Sections 3.3.4 and 4.3.3). However, NISP operations are not anticipated to change operation of these structures in any significant way, other than to add flows in some or all months of the year within the existing capacity of the canals. Existing operations of these facilities would not be impeded.

Ultimately, the objective of any interaction of NISP and the C-BT Project is to minimize any C-BT operational changes resulting from Alternative 2 with the Reclamation Contract Option. Under the current operational regime, Horsetooth Reservoir and Carter Lake are typically filled in winter and spring, starting in November or December, and they are usually full by April or May. At that point, the Adams Tunnel, which delivers C-BT water from the headwaters of the Colorado River on the West Slope to the Big Thompson River basin on the East Slope, is usually shut off. The C-BT Project then goes into "skim" operations in which native flows of the Big Thompson River are diverted at Estes Park and/or the Dille Diversion for the purpose of hydropower generation, then released back into the Big Thompson River. During the summer months, the C-BT Project makes releases, primarily from Horsetooth Reservoir and Carter Lake, to deliver water to allottees.

The exchanges proposed under the Reclamation Contract Option for Alternative 2 would result in no changes to C-BT West Slope operations; there would be no additional West Slope diversions or additional water deliveries to the East Slope through the Adams Tunnel. C-BT operational changes would be observed in certain East Slope storage and distribution facilities. For example, less water would be released from Horsetooth Reservoir via the Hansen Supply Canal, so less water would need to be delivered from Flatiron Reservoir to Horsetooth Reservoir via the Hansen Feeder Canal. There would also be operational changes at Carter Lake, where the average annual release of 29,500 AFY to NISP Participants would require pumping more water from Flatiron Reservoir into Carter Lake. However, this would be primarily a flow-through operation and typical operational reservoir levels would be maintained in Carter Lake. The amount of reduced deliveries to Horsetooth Reservoir would be about equal to the amount of increased deliveries into Carter Lake. There would be very little net effect on Horsetooth Reservoir and Carter Lake as a result of NISP-related operational changes, as demonstrated by Pineda and Brouwer (2006; see Appendix C).

The most important changes to C-BT operations as a result of the Reclamation Contract Option for Alternative 2 are the pipeline deliveries from Glade Reservoir to Horsetooth Reservoir and the changes in Hansen Supply Canal and Windsor Extension deliveries of C-BT water to the Poudre River and the PVC, respectively. These operations are described in the following sections.

3.4.1 Glade-to-Horsetooth Pipeline

The Glade-to-Horsetooth Pipeline (**Figure 3.29**) would only be necessary under the Reclamation Contract Option for Alternative 2 in the event that C-BT deliveries to the Poudre River drop below the average volume of water that NISP would deliver to project Participants by exchange through C-BT.

In conjunction with the proposed releases from Carter Lake, Horsetooth Reservoir releases to the Poudre River through the Hansen Supply Canal would be curtailed. NISP would complete an exchange to repay the deliveries from the C-BT by several means, including: (a) bypassing divertible flows at the PVC, (b) releasing stored water back to the Poudre River or PVC in lieu of Hansen Supply Canal deliveries, and (c) pumping directly from the Glade Reservoir to Horsetooth Reservoir to make up for any year-end exchange deficit. A blend of these operations could be used depending on whether the Glade-to-Horsetooth Pipeline was constructed. In planning for NISP operations with the Reclamation Contract Option, the District assumes that Reclamation would impose a 1 percent (295 AFY) surcharge for the exchange, thereby requiring that NISP deliver 29,795 AFY back to the C-BT system.

Horsetooth Reservoir releases an average of nearly 60,000 AF to the Poudre River each year. Since this is greater than the 29,500 AFY proposed to be exchanged, much of the time the combined delivery from Glade to the Poudre and bypassed NISP diversions would satisfy the exchange volume. However, there are times—particularly in years when the annual quota is less than 60 percent and C-BT deliveries are consequently low—that the C-BT deliveries to the Poudre River are less than the amount of NISP water proposed to be exchanged into Horsetooth Reservoir. NISP would have a deficit to C-BT at the end of these years (irrigation years end October 31).

It is proposed that NISP would make up these deficits to C-BT by delivering water directly from Glade Reservoir to Horsetooth Reservoir through a new pipeline with a capacity of 2,000 AFM, or about 33 cfs. A pipeline route analysis was completed by GEI and Integra (2005b); that document is included in Appendix H of this technical report.

The elevation of the proposed pipeline release into Horsetooth Reservoir at Satanka Dike is 5,440 feet. Results of spreadsheet post-processing for the Reclamation Contract Option indicate that the WSEL of Glade Reservoir would be above 5,440 feet more than 85 percent of the time (594 of 672 months for Alternative 2 with current conditions, 576 of 672 months for Alternative 2 with future conditions). Therefore, most deliveries made by pipe could be done by gravity. The Glade pump station would be used to make the deliveries possible if gravity delivery was not possible.

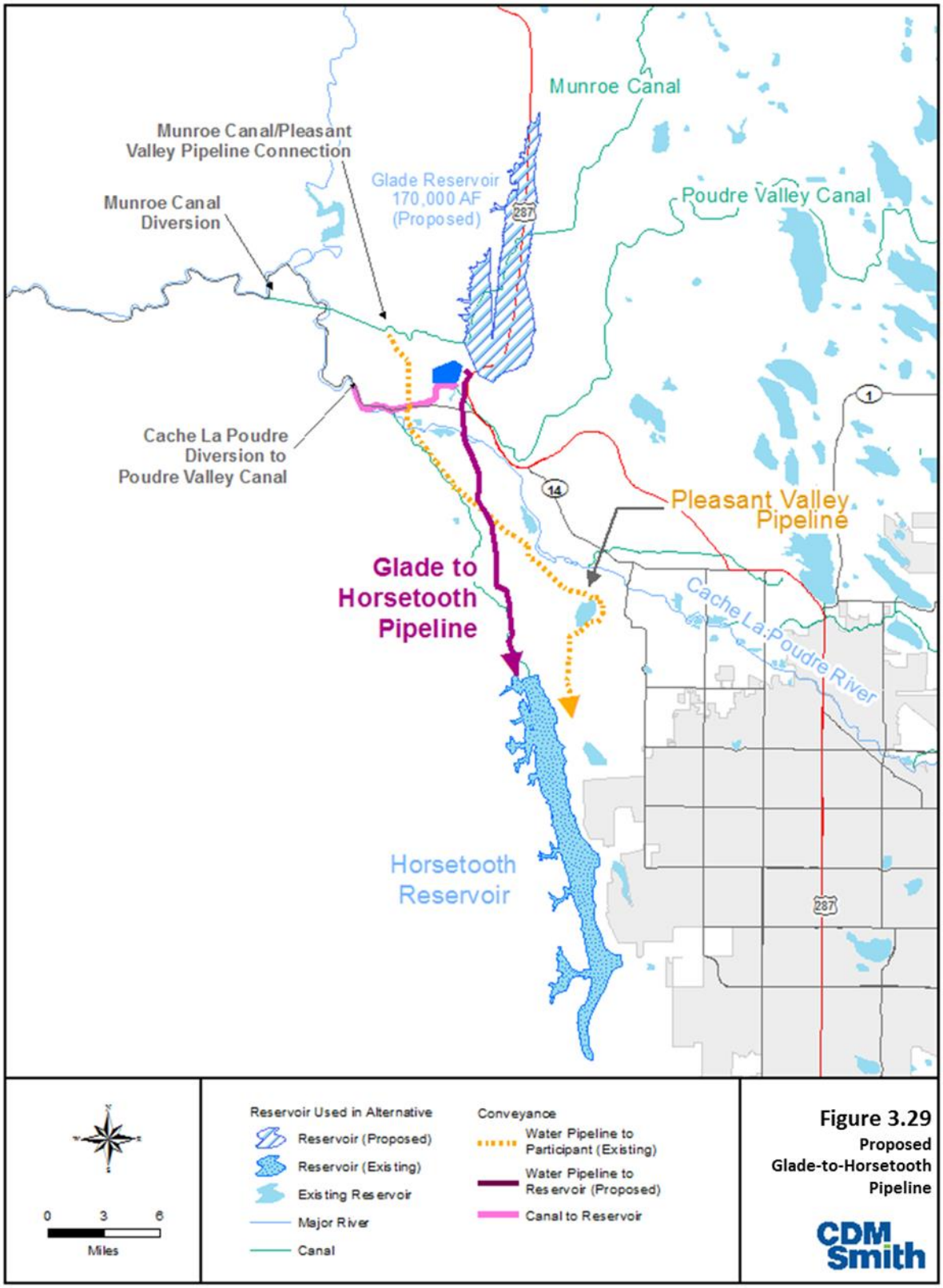


Figure 3.29
Proposed Glade-to-Horsetooth Pipeline

The District (Brouwer 2011a) proposed the following operational scenario for the Glade-to-Horsetooth Pipeline as defined below:

> Post-Pay/Poudre Delivery Exchange – This scenario first exchanges on the summer/fall deliveries from Horsetooth Reservoir to the Poudre River. Any remaining balance owed to C-BT would be piped from Glade Reservoir to Horsetooth Reservoir between November and April immediately following the year in which NISP incurred a deficit to C-BT. In the majority of years, the exchange with the C-BT deliveries to the Poudre is sufficient to make up the full amount…The primary benefit of this option is that it minimizes the amount of Glade Reservoir water physically placed in Horsetooth Reservoir

The constraint of the 2,000 AFM pipeline deliveries from Glade Reservoir to Horsetooth Reservoir over a 6-month period from November to April translates to a maximum annual delivery of 12,000 AFY. However, in rare years with high deficits due to reduced C-BT deliveries to the Poudre River during the irrigation season—generally very wet years with low C-BT quotas and therefore low releases via the Hansen Supply Canal—the post-pay period may extend into May, June, or July[7]. The final operations of the Glade-to-Horsetooth pipeline would be determined in contact negotiations with Reclamation.

Table 3.9 summarizes estimates of Glade-to-Horsetooth Pipeline deliveries over the IY 1950-2005 study period.

Table 3.9. Glade to Horsetooth Pipeline Deliveries, Alternative 2, Reclamation Contract Option, IY 1950-2005

Month	Alternative 2 with Current Conditions Hydrology (NISP Run 3a)				Alternative 2 with Future Conditions Hydrology (NISP Run 4a)			
	Number of Years with Simulated Pipeline Deliveries (out of 56)	Min [AF]	Max [AF]	Avg [AF]	Number of Years with Simulated Pipeline Deliveries (out of 56)	Min [AF]	Max [AF]	Avg [AF]
November	6	0	2,000	160	20	0	2,000	710
December	4	0	2,000	95	20	0	2,000	670
January	2	0	2,000	68	17	0	2,000	550
February	1	0	2,000	36	9	0	2,000	240
March	1	0	1,700	31	5	0	2,000	150
April	0	0	0	0	3	0	2,000	110
May	0	0	0	0	3	0	2,000	110
June	0	0	0	0	3	0	2,000	79
July	0	0	0	0	2	0	840	25
August	0	0	0	0	0	0	0	0
September	0	0	0	0	0	0	0	0
October	0	0	0	0	0	0	0	0
ANNUAL	—	**0**	**9,700**	**390**	—	**0**	**16,800**	**2,600**

[7] This scenario occurs for Alternative 2 under future conditions (based on NISP Run 4a) only, to re-pay water deficits incurred in IY 1983, 1998, and 2003.

Analyses of the post-pay scenario based on CTP Run 3a (Alternative 2 with 2010 current conditions hydrology) show deficits occurring in 6 of the 56 years. Average Glade-to-Horsetooth Pipeline delivery in the 6 years following a deficit is 3,600 AF, with a minimum of 340 AF and a maximum of 9,700 AF. Over 56 years, the average annual Glade-to-Horsetooth Pipeline delivery is 390 AFY. For Alternative 2 with 2050 future conditions hydrology, analyses show deficits occurring in 20 of 56 years, with a range of 2,600 AF to 16,800 AF and an average in those 20 years of 7,400 AF. The 56-year average annual Glade-to-Horsetooth Pipeline delivery under future conditions is estimated to be 2,600 AF.

3.4.2 Hansen Supply Canal and Windsor Extension

The Hansen Supply Canal carries C-BT water released from Horsetooth Reservoir to the Poudre River for use by agricultural allottees in the basin. The point of release to the Poudre River is located on the south bank of the Poudre River just west of Greeley's Bellvue Filter Plant. As shown in **Tables 3.10 and 3.11**, simulated releases averaged about 51,300 AFY over the period IY 1950-2005 with the current conditions baseline (CTP Run 1) and 40,000 AFY with the future conditions baseline (CTP Run 2). It is assumed that NISP would not be able to exchange on C-BT non-charge[8] water releases, so those amounts are removed from the simulated C-BT deliveries to the Poudre River basin.

Table 3.10. Modeled Horsetooth Reservoir Releases to the Poudre River Basin[1], 2010 Current Conditions Hydrology (CTP Run 1), IY 1950-2005

Month	Horsetooth Reservoir to Poudre River and PVC via Windsor Extension [AF]			Hansen Supply Canal to Poudre River [AF]			Windsor Extension to PVC [AF]		
	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg
November	0	0	0	0	0	0	0	0	0
December	0	0	0	0	0	0	0	0	0
January	0	0	0	0	0	0	0	0	0
February	0	0	0	0	0	0	0	0	0
March	0	0	0	0	0	0	0	0	0
April	0	2,700	210	0	2,700	210	0	0	0
May	0	33,900	3,200	0	33,900	3,200	0	0	0
June	0	33,700	2,900	0	33,700	2,900	0	0	0
July	0	45,100	27,100	0	45,100	27,100	0	0	0
August	0	40,900	10,800	0	40,900	10,800	0	0	0
September	0	8,600	3,100	0	8,600	3,100	0	0	0
October	0	10,200	4,000	0	7,900	2,200	0	6,200	1,800
ANNUAL	**22,700**	**83,300**	**51,300**	**20,500**	**81,900**	**49,500**	**0**	**6,200**	**1,800**

[1] Excludes non-charge water.

[8] The District has operated a non-charge water program for water users within the District boundaries. The non-charge program has historically operated when the C-BT Project storage is full and water is projected to spill or is spilling from Lake Granby. Non-charge deliveries made to allottees or account entities are not charged against their annual quota or carryover supplies.

Table 3.11. Modeled Horsetooth Reservoir Releases to the Poudre River Basin[1], 2050 Future Conditions Hydrology (CTP Run 2), IY 1950-2005

Month	Horsetooth Reservoir to Poudre River and PVC via Windsor Extension [AF]			Hansen Supply Canal to Poudre River [AF]			Windsor Extension to PVC [AF]		
	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg
November	0	0	0	0	0	0	0	0	0
December	0	0	0	0	0	0	0	0	0
January	0	0	0	0	0	0	0	0	0
February	0	0	0	0	0	0	0	0	0
March	0	0	0	0	0	0	0	0	0
April	0	2,700	420	0	2,700	420	0	0	0
May	0	34,100	3,200	0	34,100	3,200	0	0	0
June	0	31,800	2,600	0	31,800	2,600	0	0	0
July	0	43,300	22,200	0	43,300	22,200	0	0	0
August	0	29,600	6,100	0	29,600	6,100	0	0	0
September	0	6,400	2,600	0	6,400	2,600	0	0	0
October	0	10,000	2,800	0	5,700	1,200	0	8,300	1,600
ANNUAL	**13,000**	**70,100**	**40,000**	**11,800**	**69,000**	**38,300**	**0**	**8,300**	**1,600**

[1] Excludes non-charge water.

The Windsor Extension (see Figure 3.13 above) carries C-BT water across the Poudre River to the PVC, which diverts from the north bank of the Poudre River a short distance upstream of the Hansen Supply Canal outfall. Simulated average deliveries through the Windsor Extension to the PVC are 1,800 AFY in the 2010 current conditions baseline and 1,600 AFY in the 2050 future conditions baseline.

Under the Reclamation Contract Option for Alternative 2, Horsetooth Reservoir releases through the Hansen Supply Canal and Windsor Extension would be curtailed and replaced by bypassed NISP diversions or releases from the NISP storage reservoir to the Poudre River. Those releases from NISP storage are summarized in Sections 3.2.1.2 and 3.2.1.3 (Glade Reservoir releases to Poudre River and PVC). **Tables 3.12 and 3.13** summarize the estimated Hansen Supply Canal deliveries that would remain after curtailment and NISP replacement under this operational scenario.

Table 3.12. Modeled Horsetooth Reservoir Releases to the Poudre River Basin[1], Alternative 2 with Current Conditions (NISP Run 3a),Reclamation Contract Option, IY 1950-2005

Month	Horsetooth Reservoir to Poudre River and PVC via Windsor Extension [AF]			Hansen Supply Canal to Poudre River [AF]			Windsor Extension to PVC [AF]		
	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg
November	0	0	0	0	0	0	0	0	0
December	0	0	0	0	0	0	0	0	0
January	0	0	0	0	0	0	0	0	0
February	0	0	0	0	0	0	0	0	0
March	0	0	0	0	0	0	0	0	0
April	0	0	0	0	0	0	0	0	0
May	0	5,600	160	0	5,600	160	0	0	0
June	0	24,600	840	0	24,600	840	0	0	0
July	0	37,500	7,300	0	37,500	7,300	0	0	0
August	0	33,000	7,000	0	33,000	7,000	0	0	0
September	0	8,600	2,800	0	8,600	2,800	0	0	0
October	0	10,300	3,700	0	8,000	2,100	0	6,200	1,700
ANNUAL	**0**	**53,500**	**21,900**	**0**	**52,100**	**20,200**	**0**	**6,200**	**1,700**

[1] Excludes non-charge water.

Table 3.13. Modeled Horsetooth Reservoir Releases to the Poudre River Basin[1], Alternative 2 with Future Conditions (NISP Run 4a), Reclamation Contract Option, IY 1950-2005

Month	Horsetooth Reservoir to Poudre River and PVC via Windsor Extension [AF]			Hansen Supply Canal to Poudre River [AF]			Windsor Extension to PVC [AF]		
	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg
November	0	0	0	0	0	0	0	0	0
December	0	0	0	0	0	0	0	0	0
January	0	0	0	0	0	0	0	0	0
February	0	0	0	0	0	0	0	0	0
March	0	0	0	0	0	0	0	0	0
April	0	0	0	0	0	0	0	0	0
May	0	5,500	140	0	5,500	140	0	0	0
June	0	23,000	660	0	23,000	660	0	0	0
July	0	29,000	4,900	0	29,000	4,900	0	0	0
August	0	20,600	3,000	0	20,600	3,000	0	0	0
September	0	6,400	2,100	0	6,400	2,100	0	0	0
October	0	8,700	2,100	0	5,700	960	0	8,000	1,100
ANNUAL	**0**	**40,300**	**12,800**	**0**	**39,200**	**11,700**	**0**	**8,000**	**1,100**

[1] Excludes non-charge water.

Section 4

Existing and Proposed Infrastructure Associated with Alternative 3 and Alternative 4

The following sections describe existing and proposed infrastructure associated with Alternative 3 (see Figure 2.2) and Alternative 4 (see Figure 2.3) for the diversion, conveyance, storage, and delivery of NISP water. Infrastructure requirements for both alternatives are nearly identical, with the addition of a New Cache Canal diversion for Alternative 4.

4.1 Alternatives 3 and 4 Diversions and Conveyance to Storage

NISP Alternatives 3 and 4 propose to develop existing conditional water rights to make diversions from the Poudre River and the South Platte River. The following sections describe the diversion structures and conveyance proposed to be used by NISP to divert from these rivers.

4.1.1 Poudre River Diversions

For the NISP EIS analysis, Alternatives 3 and 4 would use the District's 7/8th interest in the original Grey Mountain Dam and Reservoir storage right decreed in Case No. 80CW355 as the principal source for project yield. In the change of water rights decreed in Case No. 2003CW405, only the Glade Reservoir and Glade Reservoir forebay facilities were decreed as alternate places of storage for the original Grey Mountain right. Use of Cactus Hill Reservoir would require the District to pursue a change of water rights for Cactus Hill Reservoir as an alternate place of storage for the Grey Mountain Dam and Reservoir. Similar to Alternative 2, the PVC headgate is proposed to be the principal Poudre River point of diversion for Alternatives 3 and 4. Alternative 4 adds a diversion to storage in the proposed Cactus Hill Reservoir from the New Cache Canal downstream (east) of Fort Collins.

4.1.1.1 Poudre Valley Canal

As stated above, Alternatives 3 and 4 would use the PVC as the main point of diversion from the Poudre River to fill Cactus Hill Reservoir. However, the plains location of Cactus Hill Reservoir would necessarily require PVC upgrades over most of the approximately 30-mile canal in order to provide adequate inlet capacity for filling the reservoir during high flow periods. Specifically, Alternatives 3 and 4 would require enlarging the capacity of the PVC and installing a clay or concrete liner to reduce seepage losses.

NISP diversions at the PVC would include water derived from all of the project's proposed water supply sources: (a) yield from the Grey Mountain rights; (b) yield from the SPWCP exchanges with Larimer Weld and New Cache; and (c) yield from the SPWCP exchanges with Terry Lake, Big Windsor Reservoir, and Timnath Reservoir. **Table 4.1** below summarizes the modeled occurrence frequency and magnitude of NISP diversions at the PVC for storage or immediate use under Alternative 3 with 2010 current conditions (NISP Run 3b1) and 2050 future conditions (NISP Run 4b1) during the IY 1950-2005 study period.

Table 4.1. Simulated NISP Diversions at the PVC for Storage or Immediate Use[1], Alternative 3, IY 1950-2005

Month	Alternative 3 with Current Conditions Hydrology (NISP Run 3b1)							Alternative 3 with Future Conditions Hydrology (NISP Run 4b1)						
	Number of Years with Simulated NISP Diversions at PVC HG_GLADE (out of 56)	Min HG_ GLADE [AF]	Max HG_ GLADE [AF]	Avg HG_ GLADE [AF]	Avg GreyMtn Fill [AF]	Avg Exch Fill [AF]	Avg Direct Exch [AF]	Number of Years with Simulated NISP Diversions at PVC HG_GLADE (out of 56)	Min HG_ GLADE [AF]	Max HG_ GLADE [AF]	Avg HG_ GLADE [AF]	Avg GreyMtn Fill [AF]	Avg Exch Fill [AF]	Avg Direct Exch [AF]
November	0	0	0	0	0	0	0	0	0	0	0	0	0	0
December	2	0	1,300	27	0	25	0	0	0	0	0	0	0	0
January	1	0	3,300	59	1	55	0	1	0	560	10	8	9	0
February	4	0	2,200	76	71	1	0	1	0	230	4	0	4	0
March	10	0	5,200	290	170	110	0	4	0	2,300	94	0	89	0
April	31	0	27,900	3,000	1,300	1,500	43	29	0	26,800	2,500	990	1,300	72
May	54	0	60,400	13,800	5,900	4,200	3,100	55	0	55,900	13,300	5,100	4,300	3,300
June	55	0	66,400	21,700	13,200	3,600	3,800	55	0	66,800	22,800	14,100	3,600	3,900
July	53	0	12,900	6,000	130	2,100	3,500	51	0	12,900	6,700	130	2,300	3,900
August	45	0	11,300	3,000	0	560	2,300	44	0	9,700	2,600	0	390	2,100
September	39	0	3,100	900	0	0	860	42	0	3,100	910	0	0	870
October	22	0	3,900	240	81	140	4	25	0	2,100	69	0	61	5
ANNUAL	**—**	**3,500**	**118,300**	**49,200**	**20,900**	**12,300**	**13,500**	**—**	**9,000**	**113,500**	**48,900**	**20,300**	**12,100**	**14,100**

[1] Differences between headgate diversions (HG_GLADE) and sum of individual diversions to storage or immediate use (GreyMtnFill, ExchFill, DirectExch) attributable to channel loss applied to PVC in the modeling

Under Alternative 3 with current conditions, total diversions at the PVC headgate are estimated at about 49,200 AFY, and combined inflows to storage from the Grey Mountain right and SPWCP exchanges average about 33,200 AFY. Future conditions results show modeled PVC headgate diversions for NISP of about 48,900 AFY, with 32,400 AFY diverted into storage. In both scenarios, about 13,500 AFY to 14,100 AFY is routed for immediate delivery to the NISP Participants to meet demands. Total headgate diversions are slightly higher than the sum of diversions to storage or immediate use because the modeling accounts for transit losses[9] over the nearly 30-mile conveyance from the PVC headgate to the Cactus Hill Reservoir inlet.

Annual diversions for storage or immediate use are illustrated in **Figures 4.1 and 4.2**, based on model output from NISP Run 3b1 (Alternative 3 with 2010 current conditions hydrology) and NISP Run 4b1 (Alternative 3 with 2050 future conditions hydrology), respectively.

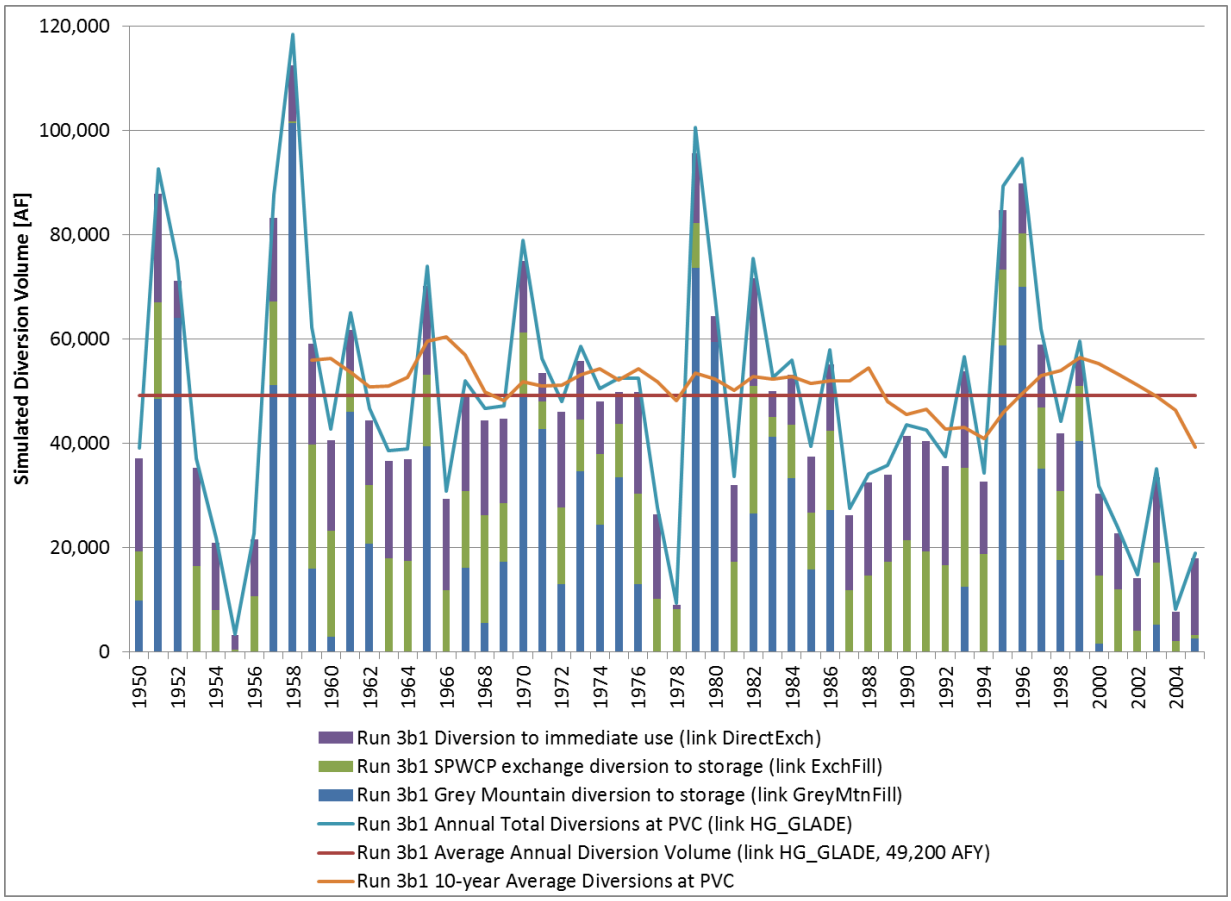


Figure 4.1 Modeled NISP Diversions at the PVC for Storage or Immediate Use, Alternative 3 with Current Conditions, IY 1950-2005

[9] Modeled as 5 percent channel losses "based on a conservative comparison to CBT canals" (District 2006), which accounts for minor seepage, evaporation, and spills.

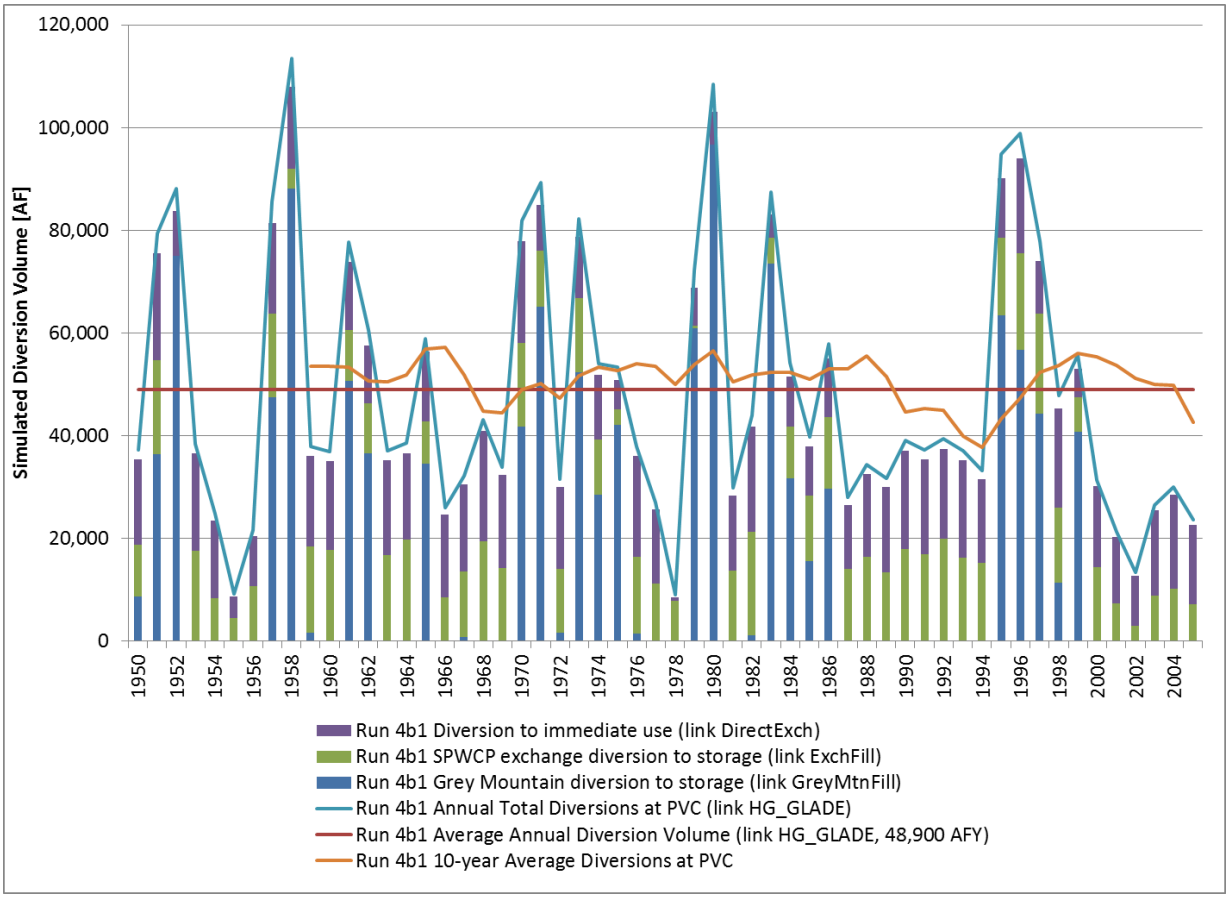


Figure 4.2 Modeled NISP Diversions at the PVC for Storage and Immediate Use, Alternative 3 with Future Conditions, IY 1950-2005

Table 4.2 summarizes simulated PVC diversions to storage or immediate use for NISP Alternative 4 with 2010 current conditions hydrology (NISP Run 3b2) and 2050 future conditions hydrology (NISP Run 4b2). Due to a portion of NISP diversions to storage being made downstream at the New Cache Canal (see Section 4.1.1.2), the Alternative 4 results for PVC diversions are somewhat less than shown above for Alternative 3.

Under Alternative 4 with current conditions, total diversions at the PVC headgate are estimated at about 37,800 AFY, and combined inflows to storage from the Grey Mountain right and SPWCP reservoir exchanges average about 25,800 AFY. Future conditions results show modeled PVC headgate diversions for NISP of about 36,000 AFY, with 24,900 AFY diverted into storage. In both scenarios, about 9,400 AFY to 10,200 AFY is routed for immediate delivery to the NISP Participants to meet demands. Total headgate diversions are slightly higher than the sum of diversions to storage or immediate use because the modeling accounts for transit losses over the nearly 30-mile conveyance from the PVC headgate to the Cactus Hill Reservoir inlet.

Table 4.2. Simulated NISP Diversions at the PVC for Storage or Immediate Use[1], Alternative 4, IY 1950-2005

Month	Alternative 4 with Current Conditions Hydrology (NISP Run 3b2)							Alternative 4 with Future Conditions Hydrology (NISP Run 4b2)						
	Number of Years with Simulated NISP Diversions at PVC HG_GLADE (out of 56)	Min HG_ GLADE [AF]	Max HG_ GLADE [AF]	Avg HG_ GLADE [AF]	Avg GreyMtn Fill [AF]	Avg Exch Fill [AF]	Avg Direct Exch [AF]	Number of Years with Simulated NISP Diversions at PVC HG_GLADE (out of 56)	Min HG_ GLADE [AF]	Max HG_ GLADE [AF]	Avg HG_ GLADE [AF]	Avg GreyMtn Fill [AF]	Avg Exch Fill [AF]	Avg Direct Exch [AF]
November	0	0	0	0	0	0	0	0	0	0	0	0	0	0
December	2	0	1,300	27	3	22	0	0	0	0	0	0	0	0
January	2	0	3,200	58	2	53	0	1	0	490	9	0	8	0
February	4	0	2,500	91	85	1	0	1	0	1,000	18	0	17	0
March	10	0	5,200	300	180	100	0	5	0	2,300	110	0	100	0
April	32	0	29,900	3,400	1,400	1,800	47	31	0	26,800	2,800	980	1,600	62
May	54	0	56,500	10,600	5,500	2,700	1,900	56	95	52,000	10,200	5,100	2,600	2,000
June	55	0	61,500	17,300	12,400	1,300	2,800	56	1,400	64,800	18,200	13,300	1,100	2,900
July	47	0	7,600	4,800	24	0	4,600	40	0	7,600	3,900	24	0	3,800
August	25	0	5,000	950	0	0	940	25	0	4,400	680	0	0	680
September	0	0	0	0	0	0	0	1	0	380	7	0	0	7
October	24	0	3,800	250	100	130	4	25	0	2,300	110	3	92	5
ANNUAL	**—**	**2,500**	**109,400**	**37,800**	**19,700**	**6,200**	**10,200**	**—**	**4,700**	**106,800**	**36,000**	**19,400**	**5,500**	**9,400**

[1] Differences between headgate diversions (HG_GLADE) and sum of individual diversions to storage or immediate use (GreyMtnFill, ExchFill, DirectExch) attributable to channel loss applied to PVC in the modeling or surplus headgate diversions returned immediately to the river.

Annual diversions for storage or immediate use are illustrated in **Figures 4.3 and 4.4**, based on model output from NISP Run 3b2 (Alternative 4 with 2010 current conditions hydrology) and NISP Run 4b2 (Alternative 4 with 2050 future conditions hydrology), respectively.

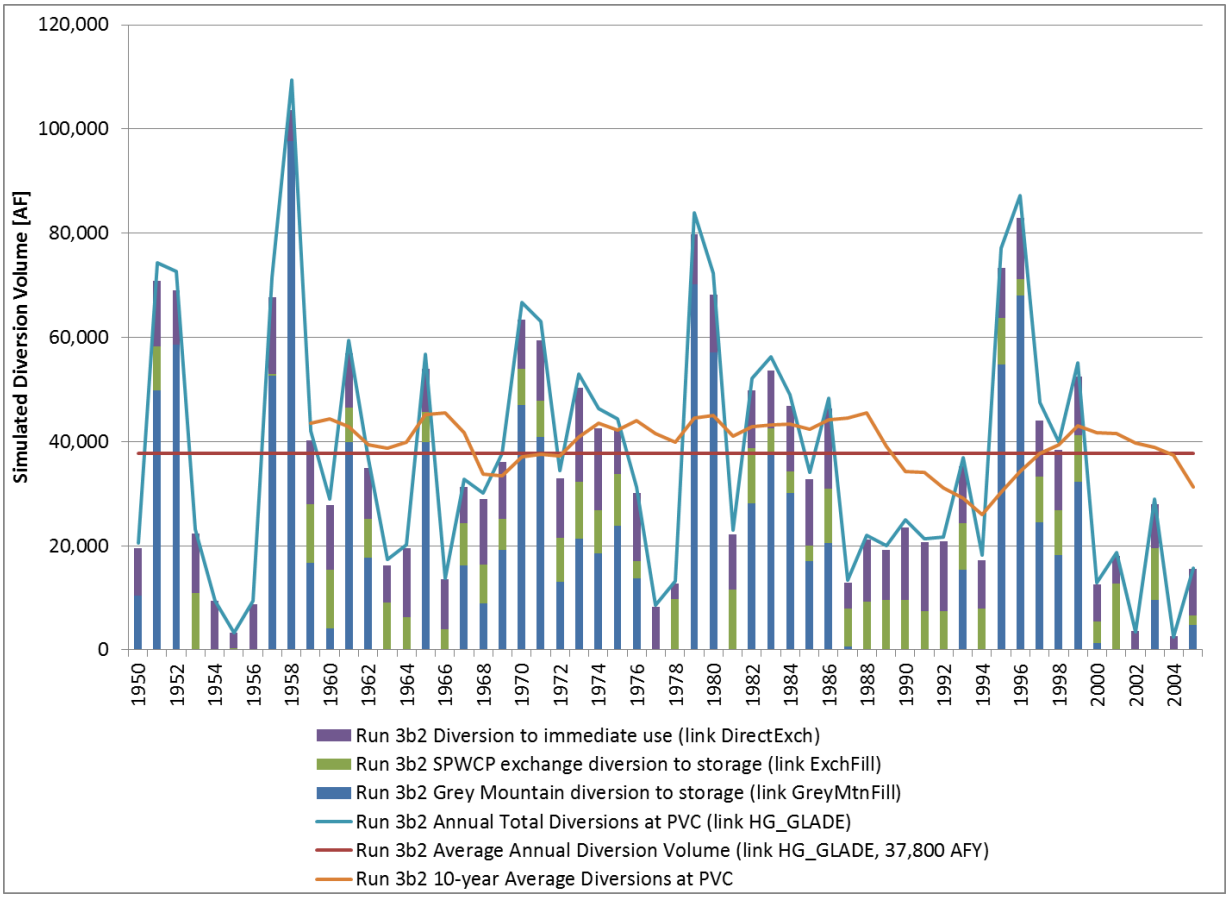


Figure 4.3 Modeled NISP Diversions at the PVC for Storage or Immediate Use, Alternative 4 with Current Conditions, IY 1950-2005

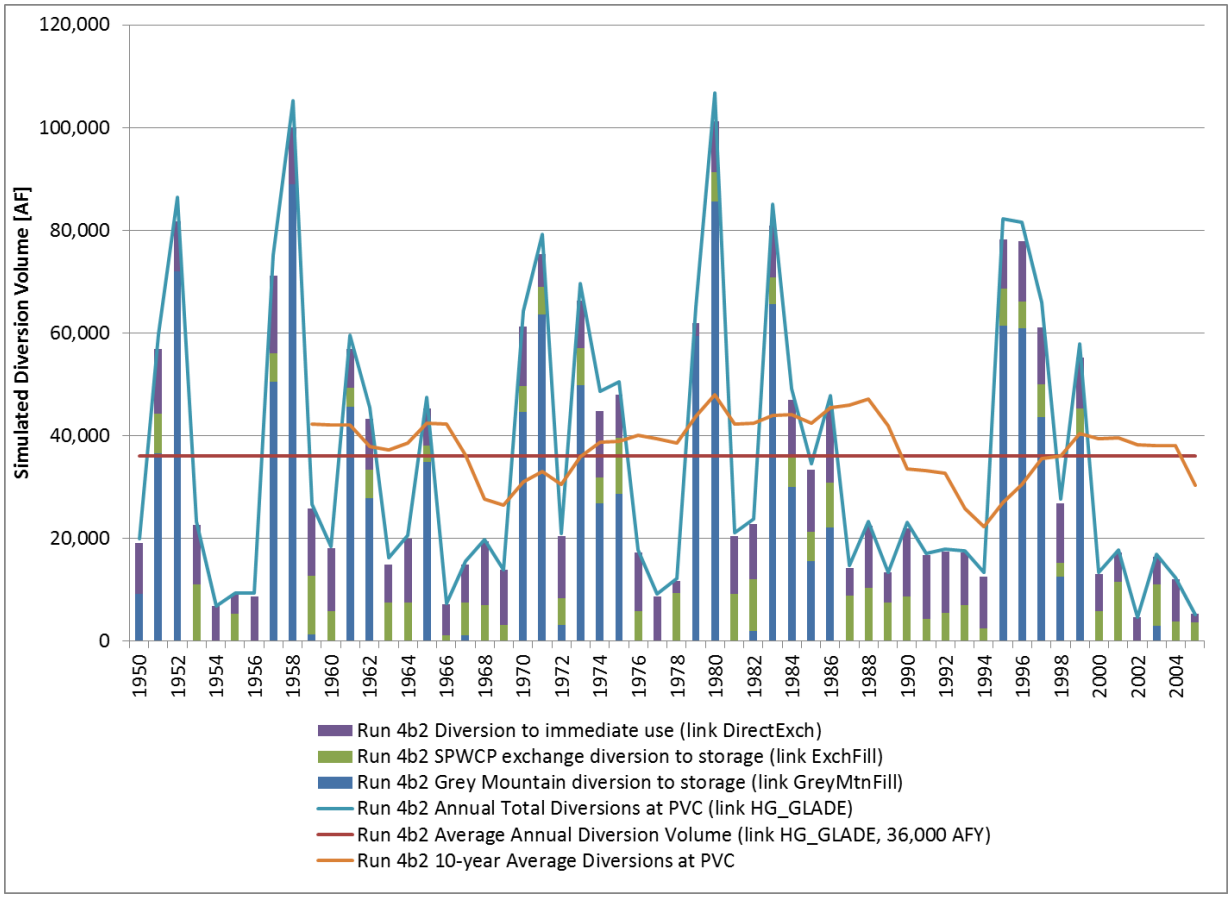


Figure 4.4 Modeled NISP Diversions at the PVC for Storage and Immediate Use, Alternative 4 with Future Conditions, IY 1950-2005

4.1.1.2 New Cache Canal Diversion and Pipeline (Alternative 4 only)

Alternative 4 features NISP diversions from the Poudre River to storage in the proposed Cactus Hill Reservoir via a turnout from the New Cache Canal, summarized in **Table 4.3** below. The diverted water would then be conveyed from the New Cache Canal to storage in Cactus Hill Reservoir by a pump station and pipeline (see **Figure 4.5**). ERO (2014) assumed the following specifications for the New Cache to Cactus Hill Pipeline:

- Diameter = 54 inches
- Length = 66,021 feet (12.5 miles)
- Installed HP = 6,000
- Average annual pumped volume = 11,000 AFY
- Average pumped rate = 100 cfs

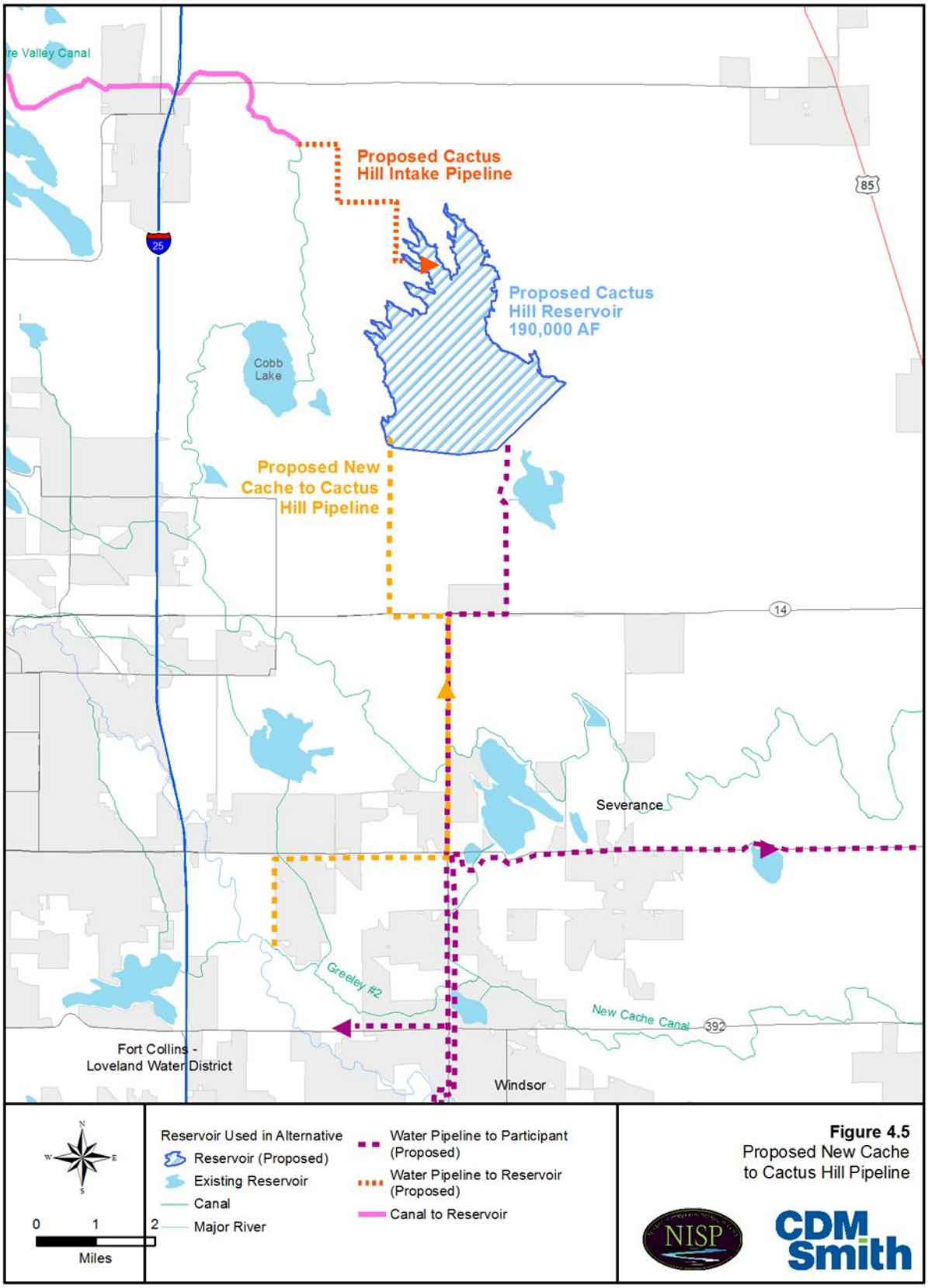


Figure 4.5
Proposed New Cache to Cactus Hill Pipeline

Table 4.3. Estimated NISP Diversions at the New Cache Canal, Alternative 4, IY 1950-2005

Month	Alternative 4 with Current Conditions Hydrology (NISP Run 3b2)				Alternative 4 with Future Conditions Hydrology (NISP Run 4b2)			
	Number of Years with Simulated NISP Diversions (out of 56)	Min [AF]	Max [AF]	Avg [AF]	Number of Years with Simulated NISP Diversions (out of 56)	Min [AF]	Max [AF]	Avg [AF]
November	0	0	0	0	0	0	0	0
December	0	0	0	0	0	0	0	0
January	0	0	0	0	0	0	0	0
February	0	0	0	0	0	0	0	0
March	0	0	0	0	0	0	0	0
April	0	0	0	0	0	0	0	0
May	48	0	6,100	3,500	49	0	6,100	3,600
June	52	0	6,000	3,800	52	0	6,000	4,200
July	49	0	6,100	2,300	47	0	6,100	1,500
August	30	0	5,700	1,400	33	0	6,100	1,500
September	11	0	1,700	39	12	0	290	22
October	0	0	0	0	0	0	0	0
ANNUAL	—	**5**	**20,400**	**11,000**	—	**78**	**20,600**	**12,300**

4.1.2 South Platte River Diversion

For Alternatives 3 and 4, the SPWCP South Platte River diversion dam, intake structure, forebay, and pumping station infrastructure would be exactly the same as described previously for Alternative 2 in Section 3.1.2. **Table 4.4** and **Figure 4.6** summarize simulated NISP diversions at the SPWCP South Platte River intake under Alternative 3 with current and future conditions hydrology, respectively, for the IY 1950-2005 study period. Model data for the table and figure are from NISP Run 3b1 (Alternative 3 with 2010 current conditions hydrology) and NISP Run 4b1 (Alternative 3 with 2050 future conditions hydrology).

Table 4.4. Estimated NISP Diversions at the SPWCP South Platte River Intake, Alternative 3, IY 1950-2005

Month	Alternative 3 with Current Conditions Hydrology (NISP Run 3b1)				Alternative 3 with Future Conditions Hydrology (NISP Run 4b1)			
	Number of Years with Simulated NISP Diversions (out of 56)	Min [AF]	Max [AF]	Avg [AF]	Number of Years with Simulated NISP Diversions (out of 56)	Min [AF]	Max [AF]	Avg [AF]
November	36	0	11,900	2,900	28	0	11,900	2,400
December	31	0	12,300	2,600	29	0	12,300	3,000
January	30	0	12,300	3,000	29	0	12,300	3,000
February	24	0	11,100	2,100	24	0	11,100	1,900
March	51	0	12,300	1,700	50	0	12,300	1,600
April	53	0	11,900	2,100	53	0	11,900	2,100
May	48	0	12,300	4,000	45	0	12,300	5,000
June	41	0	11,900	4,400	39	0	11,900	4,400
July	28	0	12,300	2,000	26	0	12,300	2,200
August	19	0	12,300	1,700	23	0	12,300	1,600
September	42	0	11,900	2,800	44	0	11,900	2,600
October	41	0	5,200	900	41	0	5,400	790
ANNUAL	—	**1,700**	**63,600**	**30,000**	—	**2,300**	**58,800**	**30,600**

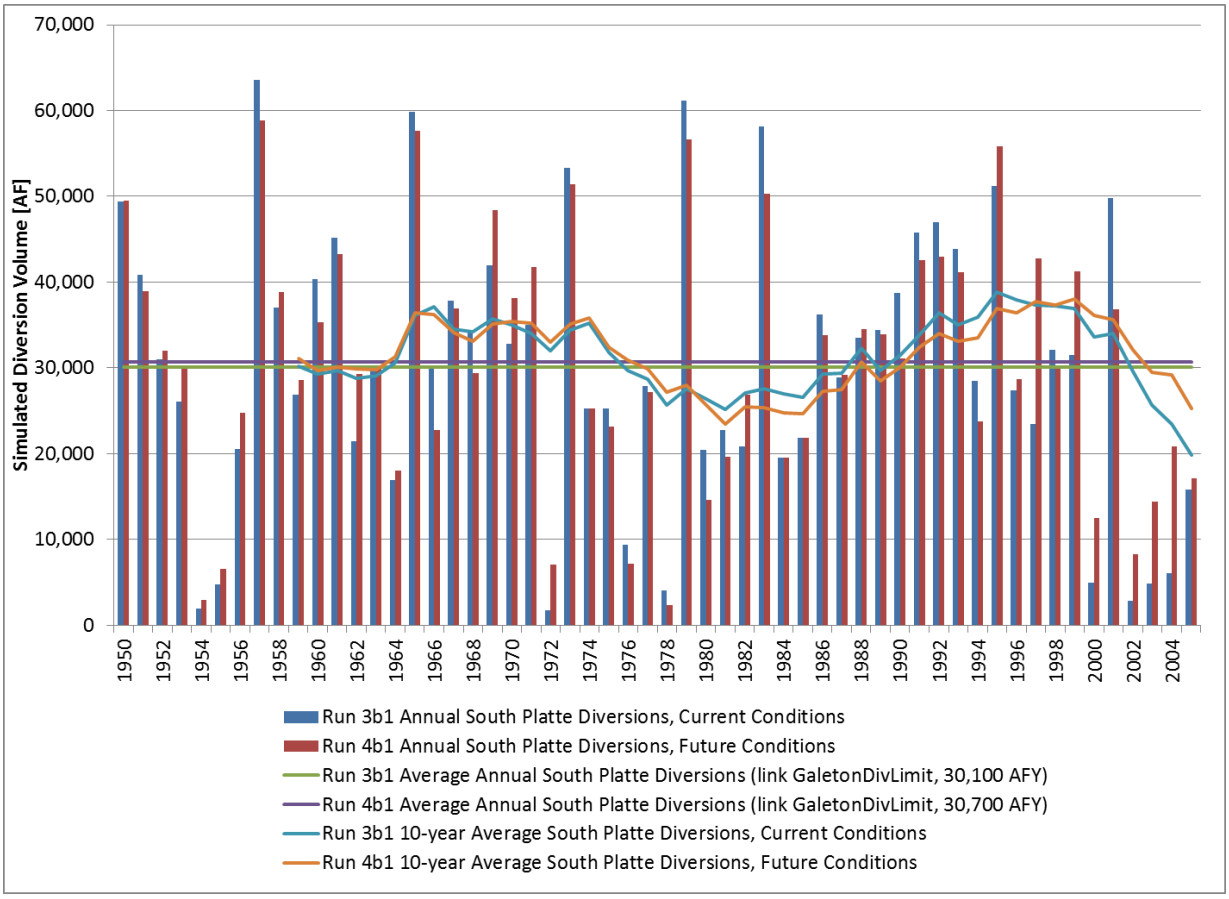


Figure 4.6 Estimated NISP Diversions at the SPWCP South Platte River Intake, Alternative 3, IY 1950-2005

Table 4.5 and **Figure 4.7** summarize simulated NISP diversions at the SPWCP South Platte River intake under Alternative 4 with current and future conditions hydrology, respectively, for the IY 1950-2005 study period. Model data for the table and figure are from NISP Run 3b2 (Alternative 4 with 2010 current conditions hydrology) and NISP Run 4b2 (Alternative 4 with 2050 future conditions hydrology).

Table 4.5. Estimated NISP Diversions at the SPWCP South Platte River Intake, Alternative 4, IY 1950-2005

Month	Alternative 4 with Current Conditions Hydrology (NISP Run 3b2)				Alternative 4 with Future Conditions Hydrology (NISP Run 4b2)			
	Number of Years with Simulated NISP Diversions (out of 56)	Min [AF]	Max [AF]	Avg [AF]	Number of Years with Simulated NISP Diversions (out of 56)	Min [AF]	Max [AF]	Avg [AF]
November	38	0	11,900	3,400	28	0	11,900	2,900
December	33	0	12,300	3,400	34	0	12,300	3,600
January	33	0	12,300	3,300	30	0	12,300	3,100
February	25	0	11,100	2,300	25	0	11,100	2,000
March	51	0	12,300	1,700	50	0	12,300	1,700
April	53	0	11,900	2,000	53	0	11,900	2,200
May	48	0	12,300	4,100	45	0	12,300	4,900
June	41	0	11,900	4,900	39	0	11,900	5,000
July	28	0	12,300	2,200	27	0	12,300	2,200
August	19	0	12,300	1,700	23	0	12,300	1,600
September	43	0	11,900	2,400	44	0	11,900	2,400
October	40	0	5,200	820	39	0	5,400	640
ANNUAL	—	**1,900**	**63,600**	**32,000**	—	**1,700**	**63,700**	**32,200**

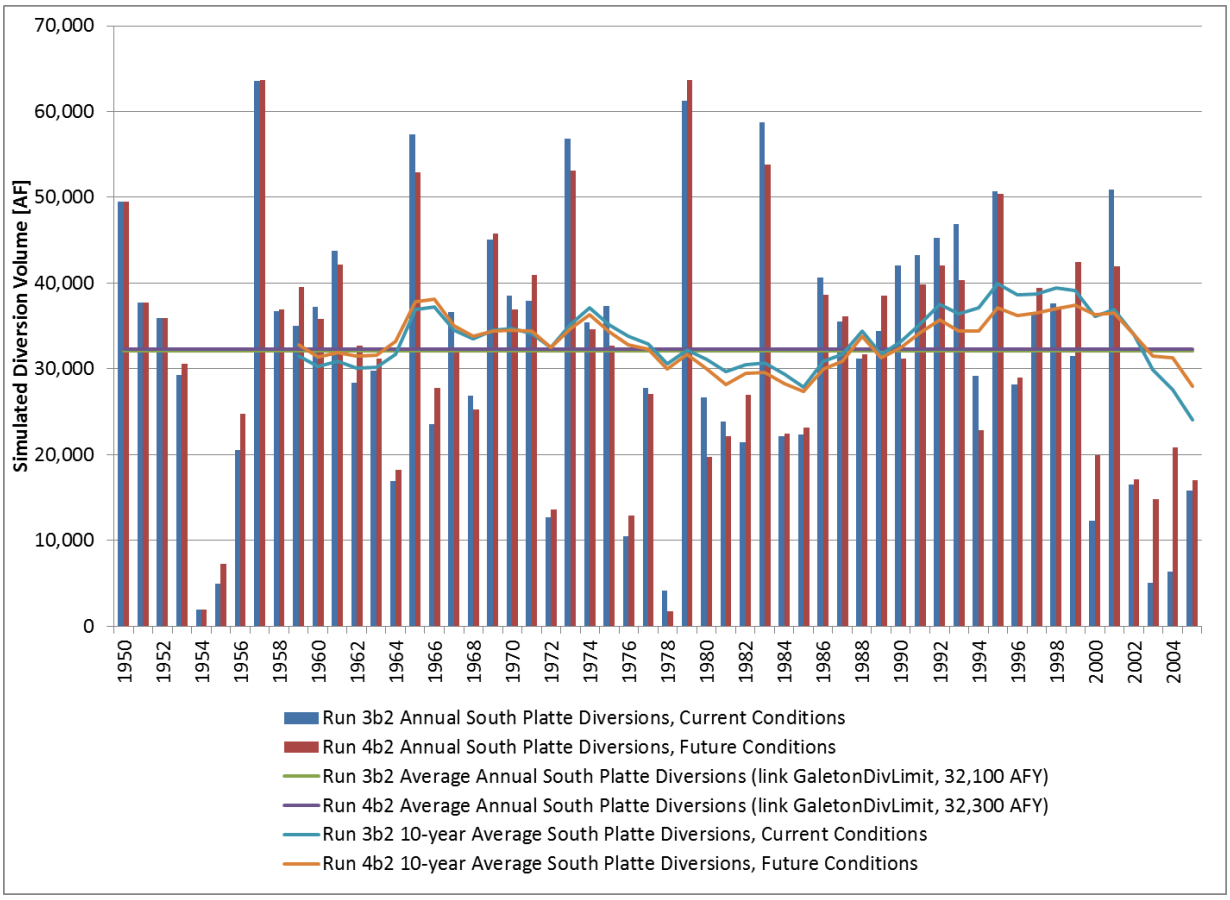


Figure 4.7 Estimated NISP Diversions at the SPWCP South Platte River Intake, Alternative 4, IY 1950-2005

4.2 Alternative 3 and Alternative 4 Storage Reservoirs

Alternatives 3 and 4 include two proposed storage reservoirs for NISP: Cactus Hill Reservoir (190,000 AF proposed active storage capacity) and Galeton Reservoir (45,624 AF proposed active storage capacity). These reservoirs are described in the following sections.

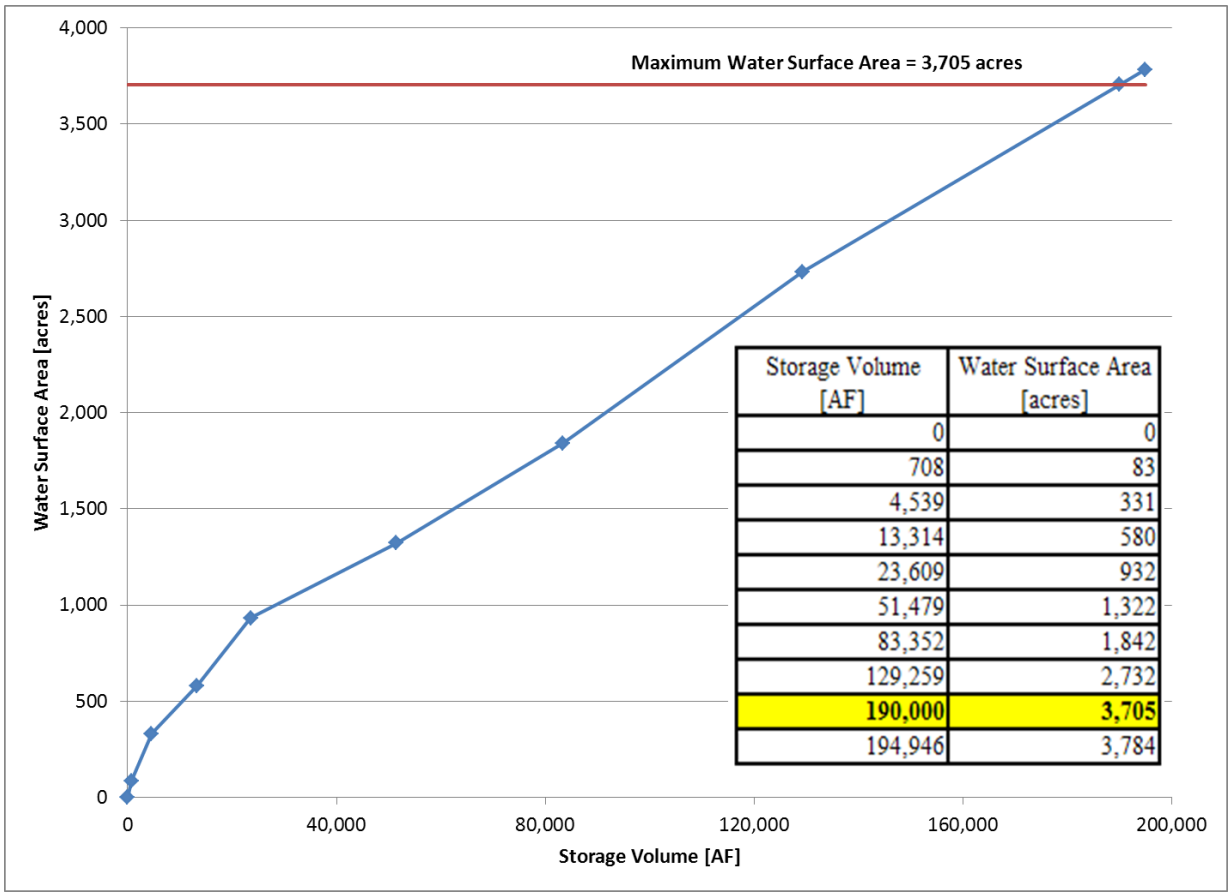
4.2.1 Cactus Hill Dam and Reservoir

As currently proposed for NISP Alternatives 3 and 4, the primary storage reservoir for the project would be Cactus Hill Reservoir, with a proposed maximum active storage capacity of 190,000 AF. The proposed site of Cactus Hill Reservoir is on the plains a few miles northwest of Severance, about 2 miles east of the existing Cobb Lake, and directly upstream of the existing Black Hollow Reservoir in the Black Hollow Creek drainage. The current proposed reservoir capacity of 190,000 AF is 10,000 AF larger than the Cactus Hill Reservoir described in the NISP DEIS (Corps 2008) and 20,000 AF larger than the proposed Glade Reservoir in Alternative 2. This larger storage capacity is due to the larger surface area, greater seepage rate and plains location of the Cactus Hill site, which has higher evaporation and seepage losses than the foothills Glade site[10]. Additionally, larger transit losses would occur due to the greater PVC travel distance to the Cactus Hill site. Transit losses from the PVC would be minimized by lining the canal with clay or concrete; for this NEPA analysis, PVC transit losses were modeled as 5 percent of diversions. Cactus Hill Reservoir would include up to an additional 3,000 AF of inactive storage. The Cactus Hill dam would be about 170 feet high and constructed with onsite excavated materials. The maximum depth of the reservoir would be about 159 feet and the mean depth would be about 140 feet. The estimated hydraulic residence time of water in Cactus Hill Reservoir would be 5.2 years for Alternative 3 and 4.6 years for Alternative 4.

Figures 4.8 and 4.9 provide the storage-area and storage-elevation relationships for the proposed Cactus Hill Reservoir. At the proposed maximum active capacity of 190,000 AF, Cactus Hill Reservoir would have a surface area of 3,705 acres (5.8 square miles) and a WSEL of 5,239 feet above mean sea level (±5 feet, subject to detailed survey and final design).

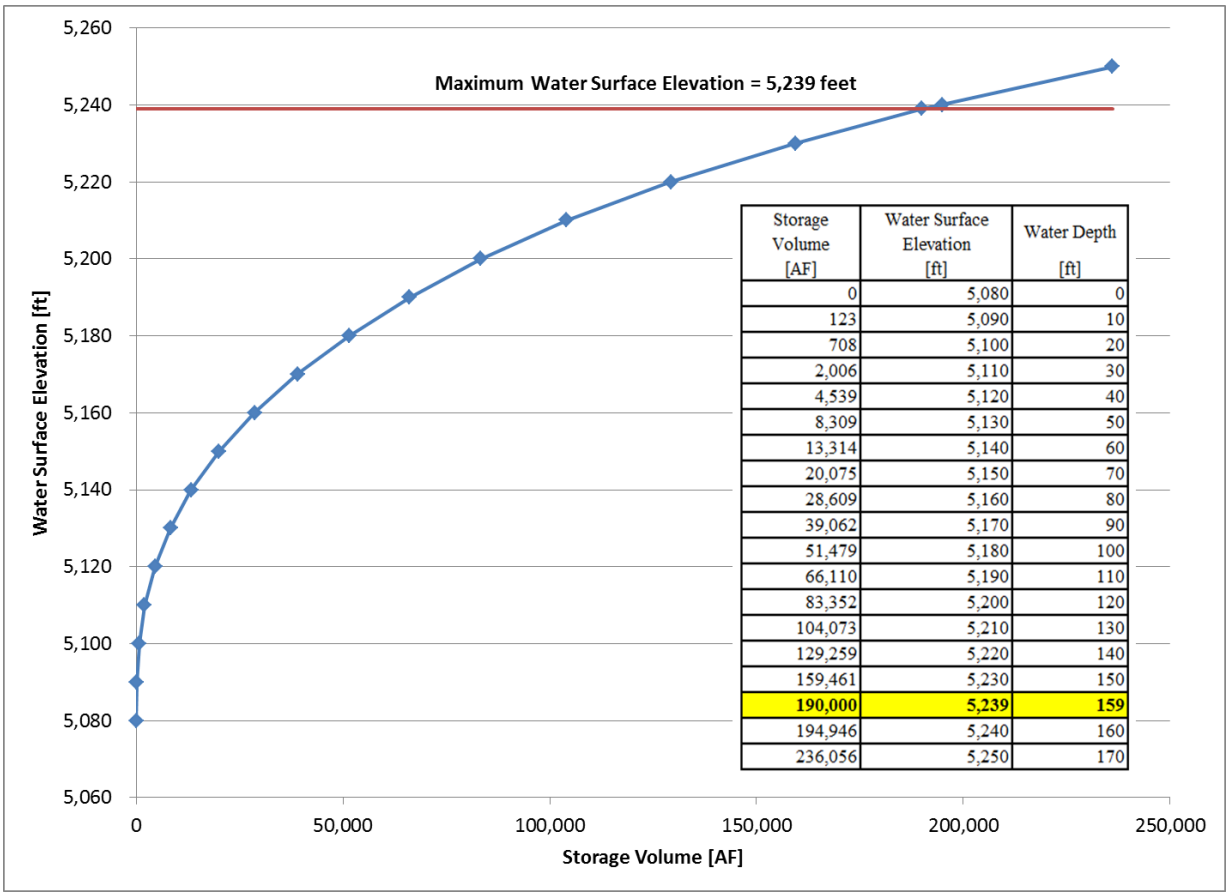
Pumping from the PVC into Cactus Hill Reservoir would be via an up to 2,000 AF forebay and pump station adjacent to the canal. The proposed pipeline alignment from the pump station would traverse southeast to the upper end of Cactus Hill Reservoir. Any changes to the general alignment of the inlet pipeline will be determined prior to the Final EIS. In addition, the proposed Cactus Hill Reservoir would include a multi-level outlet tower to allow for selective withdrawals from the different reservoir elevations. The exact configuration of this tower, including gate spacing, screening requirements, and flow requirements, would be determined during final design in consultation with the Dam Safety Branch of the Colorado DWR.

[10] Net evaporation was modeled as 24.2 inches/year at Glade Reservoir and 26.5 inches/year at Cactus Hill Reservoir. See Section 2.6.2, Section 7.4.1.1, and Section 7.4.2 of the *CTP Hydrologic Modeling Report* (CDM Smith and DiNatale Water Consultants 2013).



Storage Volume [AF]	Water Surface Area [acres]
0	0
708	83
4,539	331
13,314	580
23,609	932
51,479	1,322
83,352	1,842
129,259	2,732
190,000	**3,705**
194,946	3,784

Figure 4.8 Storage-Area Relationship for the Proposed Cactus Hill Reservoir



Storage Volume [AF]	Water Surface Elevation [ft]	Water Depth [ft]
0	5,080	0
123	5,090	10
708	5,100	20
2,006	5,110	30
4,539	5,120	40
8,309	5,130	50
13,314	5,140	60
20,075	5,150	70
28,609	5,160	80
39,062	5,170	90
51,479	5,180	100
66,110	5,190	110
83,352	5,200	120
104,073	5,210	130
129,259	5,220	140
159,461	5,230	150
190,000	**5,239**	**159**
194,946	5,240	160
236,056	5,250	170

Figure 4.9 Storage-Elevation Relationship for the Proposed Cactus Hill Reservoir

Figure 4.10 illustrates the simulated EOM storage level in the proposed Cactus Hill Reservoir based on NISP Run 3b1 (Alternative 3 with 2010 current conditions hydrology) and NISP Run 4b1 (Alternative 3 with 2050 future conditions hydrology).

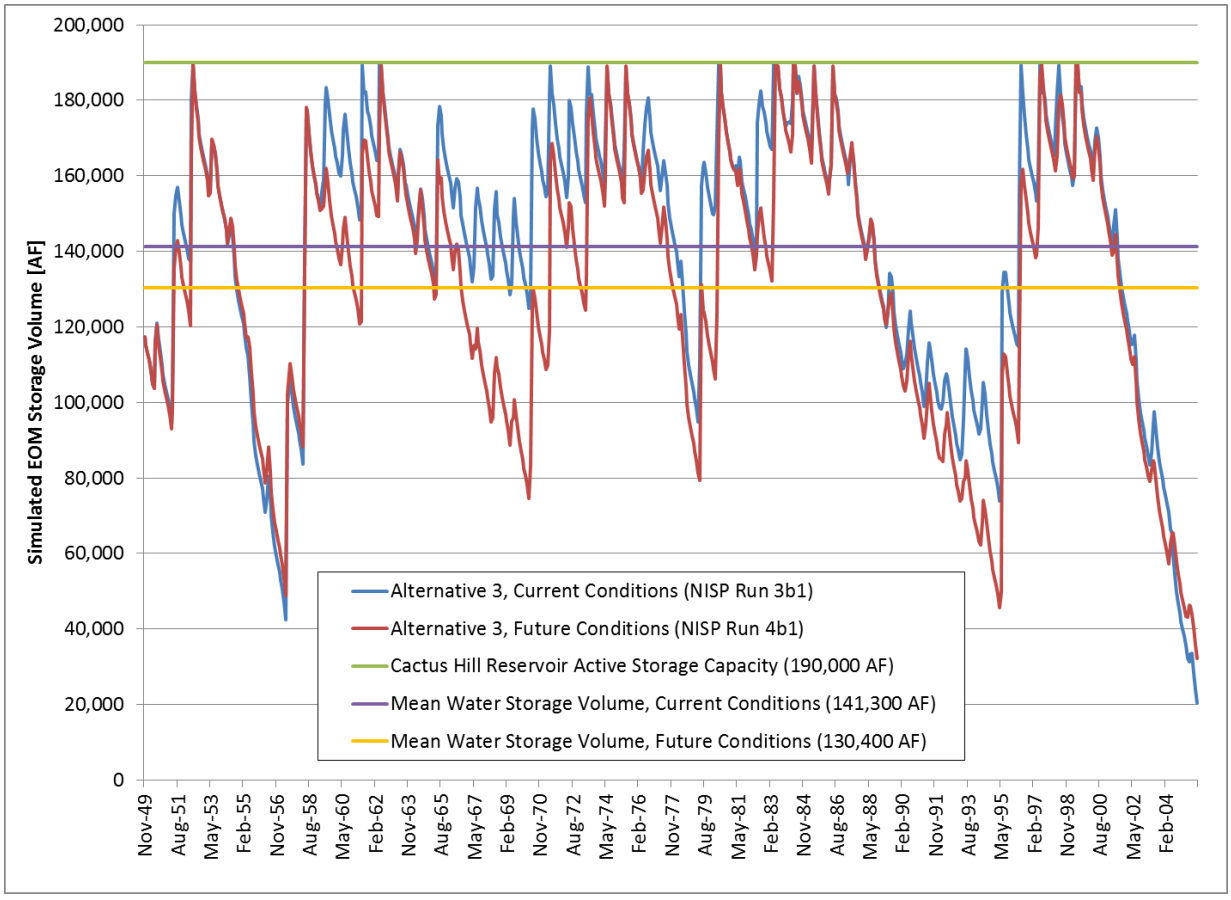


Figure 4.10 Cactus Hill Reservoir EOM Storage, Alternative 3, IY 1950-2005

Figures illustrating estimated Cactus Hill Reservoir EOM water surface area, annual evaporation, and EOM WSEL are included in Appendix D. Mean water surface area and average annual evaporation are summarized below for Alternative 3.

- Cactus Hill Reservoir estimated mean surface area
  - Current conditions = 2,895 acres
  - Future conditions = 2,708 acres

- Cactus Hill Reservoir estimated average annual evaporation
  - Current conditions = 6,500 AFY (4.6 percent of 141,300 AF average storage)
  - Future conditions = 6, 100 AFY (4.7 percent of 130,400 AF average storage)

Figure 4.11 illustrates the simulated EOM storage level in the proposed Cactus Hill Reservoir based on NISP Run 3b2 (Alternative 4 with 2010 current conditions hydrology) and NISP Run 4b2 (Alternative 4 with 2050 future conditions hydrology).

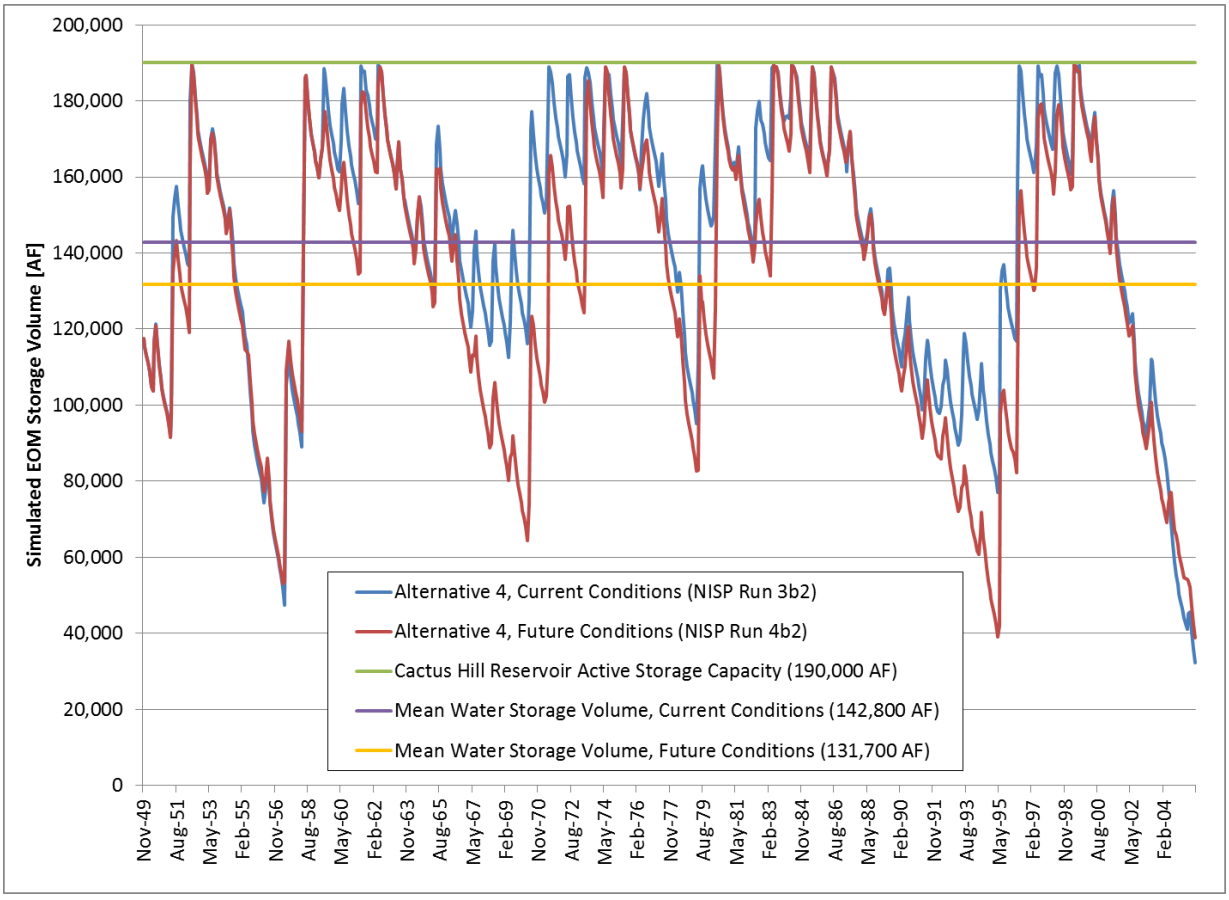


Figure 4.11 Cactus Hill Reservoir EOM storage, Alternative 4, IY 1950-2005

Figures illustrating estimated Cactus Hill Reservoir EOM water surface area, annual evaporation, and EOM WSEL are included in Appendix E. Mean water surface area and average annual evaporation are summarized below for Alternative 4.

- Cactus Hill Reservoir estimated mean surface area
  - Current conditions = 2,921 acres
  - Future conditions = 2,728 acres

- Cactus Hill Reservoir estimated average annual evaporation
  - Current conditions = 6,600 AFY (4.6 percent of 142,800 AF average storage)
  - Future conditions = 6,200 AFY (4.7 percent of 131,700 AF average storage)

4.2.2 Galeton Dam and Reservoir

Alternatives 3 and 4 would include the proposed Galeton Reservoir with a maximum storage capacity of 45,624 AF. All components of the infrastructure associated with Galeton Reservoir would be exactly the same as described for Alternative 2 in Section 3.2.2.

Figure 4.12 shows the simulated EOM storage level in the proposed Galeton Reservoir for Alternative 3 over the IY 1950-2005 study period with both current and future baseline conditions. **Figure 4.13** shows the same for Alternative 4. Figures illustrating estimated Galeton Reservoir EOM water surface area, annual evaporation, and EOM WSEL are included in Appendix F (Alternative 3) and Appendix G (Alternative 4) Mean water surface area and average annual evaporation are summarized below for Alternatives 3 and 4.

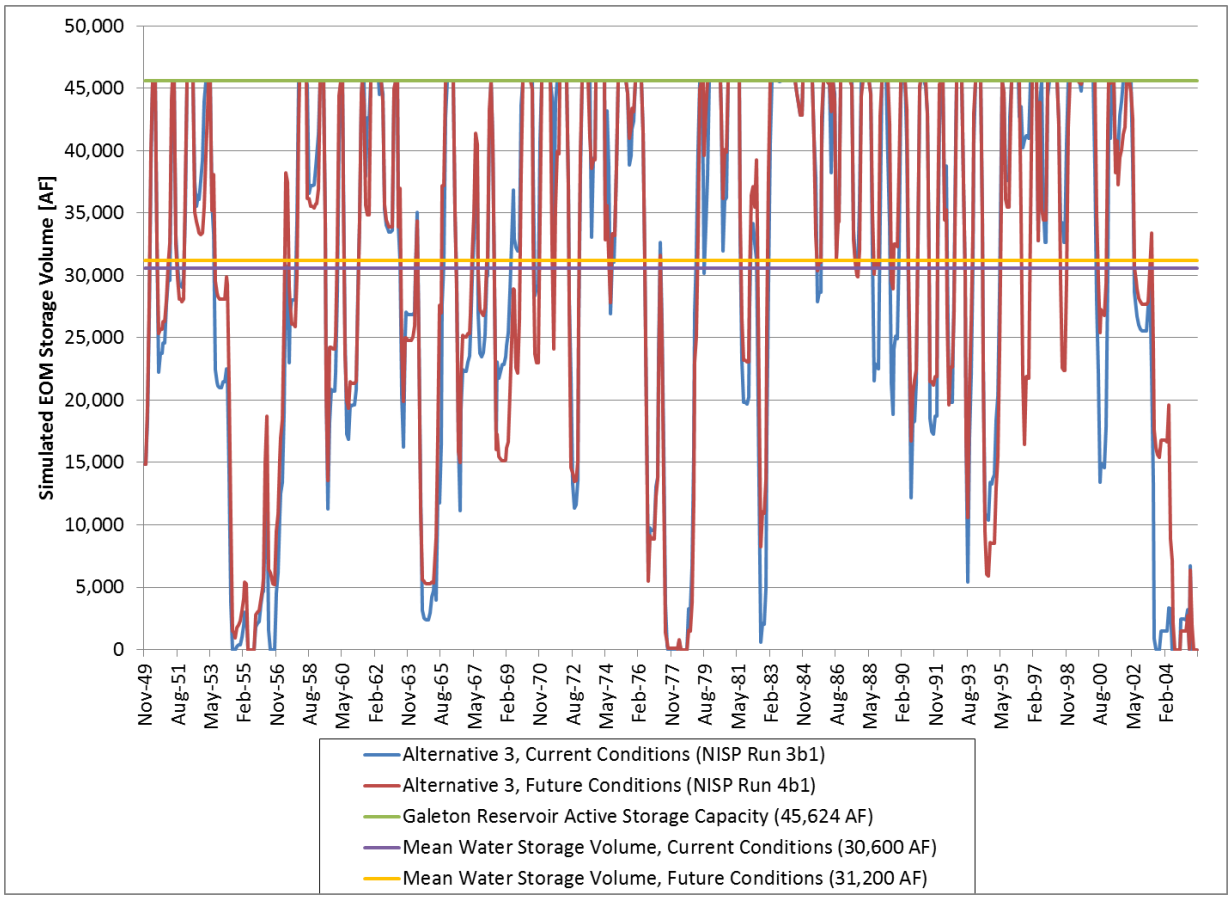


Figure 4.12 Galeton Hill Reservoir EOM storage, Alternative 3, IY 1950-2005

- Galeton Reservoir estimated mean surface area – Alternative 3
  - Current conditions = 1,508 acres
  - Future conditions = 1,548 acres

- Galeton Reservoir estimated average annual evaporation – Alternative 3
  - Current conditions = 3,900 AFY (12.7 percent of 30,600 AF average storage)
  - Future conditions = 4,000 AFY (12.8 percent of 31,200 AF average storage)

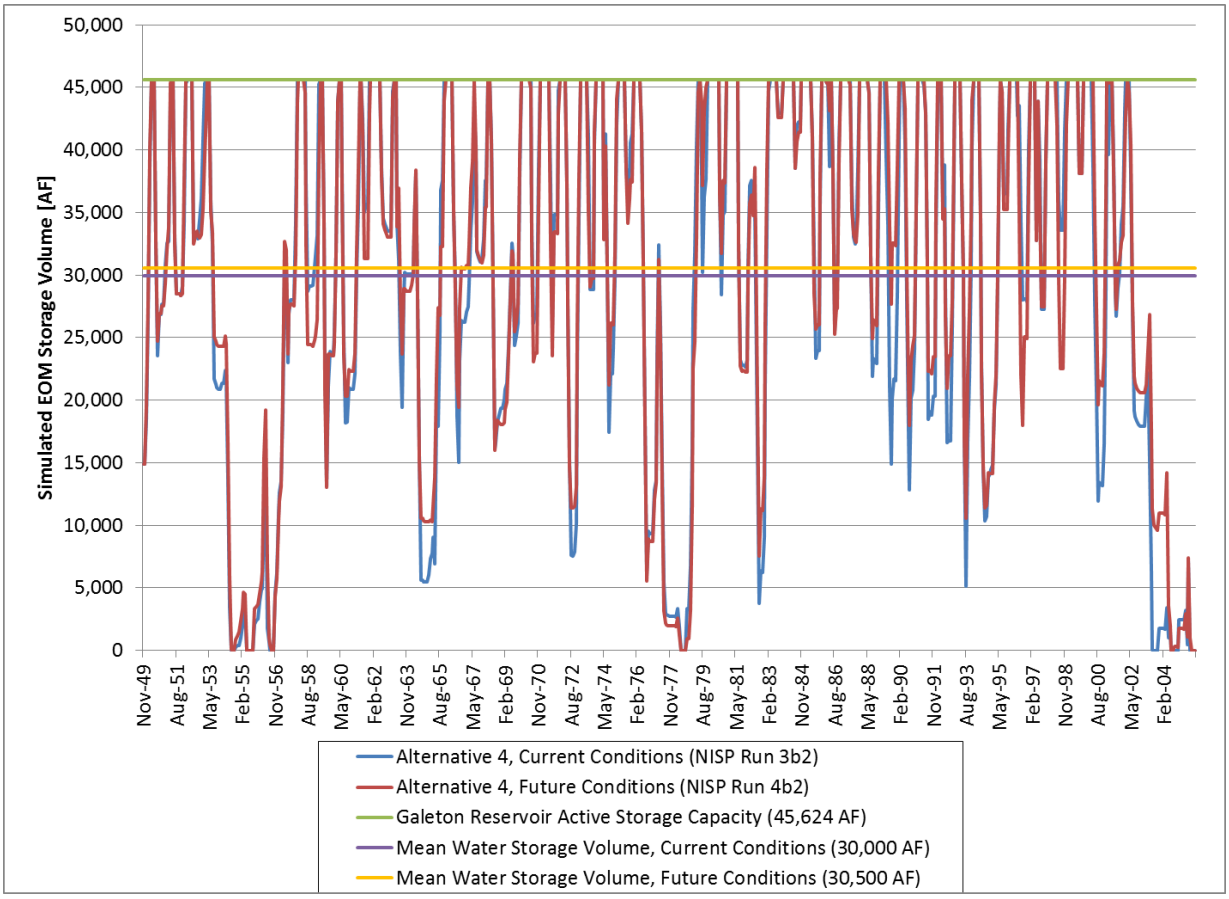


Figure 4.13 Galeton Hill Reservoir EOM Storage, Alternative 4, IY 1950-2005

- Galeton Reservoir estimated mean surface area – Alternative 4
  - Current conditions = 1,499 acres
  - Future conditions = 1,530 acres

- Galeton Reservoir estimated average annual evaporation – Alternative 4
  - Current conditions = 3,800 AF (12.7 percent of 30,000 AF average storage)
  - Future conditions = 3,900 AFY (12.8 percent of 30,500 AF average storage)

4.3 Alternative 3 and Alternative 4 – Other Conveyance

Several other proposed pipelines are required or potentially required to facilitate the operation of Alternatives 3 and 4, including the pipeline for delivering water from Cactus Hill Reservoir to the NISP Participants and the SPWCP Larimer Weld and New Cache delivery pipelines. Alternatives 3 and 4 would also require the use of some existing C-BT infrastructure and the existing SWSP in order to make deliveries to those NISP Participants located in the southern and eastern areas of the District. These various conveyance mechanisms are described in the following sections.

4.3.1 Cactus Hill Delivery Pipeline

Under Alternatives 3 and 4, NISP water would be delivered to all of the project Participants via a pipeline from Cactus Hill Reservoir. The proposed alignment for this pipeline, shown in **Figure 4.14**, is based on pipeline alignments developed by MWH (2010) for the NISP No Action Alternative. The 98 miles of pipe alignments are conceptual in nature and illustrate the approximate location and length required.

Preliminary sizing of the Cactus Hill delivery pipeline was developed by ERO Resources in its update of NISP costs (ERO 2014) based in part on the following assumptions:

- Peak flow is based on the demand pattern used for NISP in the hydrologic modeling with July as the peak demand month (see Section 7.4.1.1 of the *CTP Hydrologic Modeling Report* [CDM Smith and DiNatale Water Consultants 2013])
- All of the NISP Participants receiving water via this pipeline would treat their own water from Cactus Hill Reservoir, or form groups to do so
- CWCWD would continue to treat water at their Carter Filter Plant and LHWD would treat at their Dodd plant
- For Alternative 4, it is assumed that New Cache water would first go into Cactus Hill Reservoir to be blended with water diverted further upstream

Table 4.6 below summarizes the preliminary pipe sizes and lengths for the segments of this pipeline, which would also require three pumping stations.

Table 4.6. Pipe Segment Properties for Cactus Hill Delivery Pipeline

Segment	Estimated Diameter (in)	Estimated Length (ft.)
Cactus Hill Reservoir outlet works to Windsor	91	42,600
Turnout to Eaton and Severance	6	51,900
Turnout to FCLWD	7	10,300
Windsor to Carter Lake Filter Plant/CWCWD Turnout	71	96,900
Turnout to Evans	4	35,800
CWCWD Turnout to Carter Filter	8	79,600
CWCWD Turnout to SWSP Pipe	18	29,100
SWSP to Erie Junction	30	81,300
Erie Junction to Erie and Lafayette	19	38,200
Erie Junction to LHWD	4	52,700

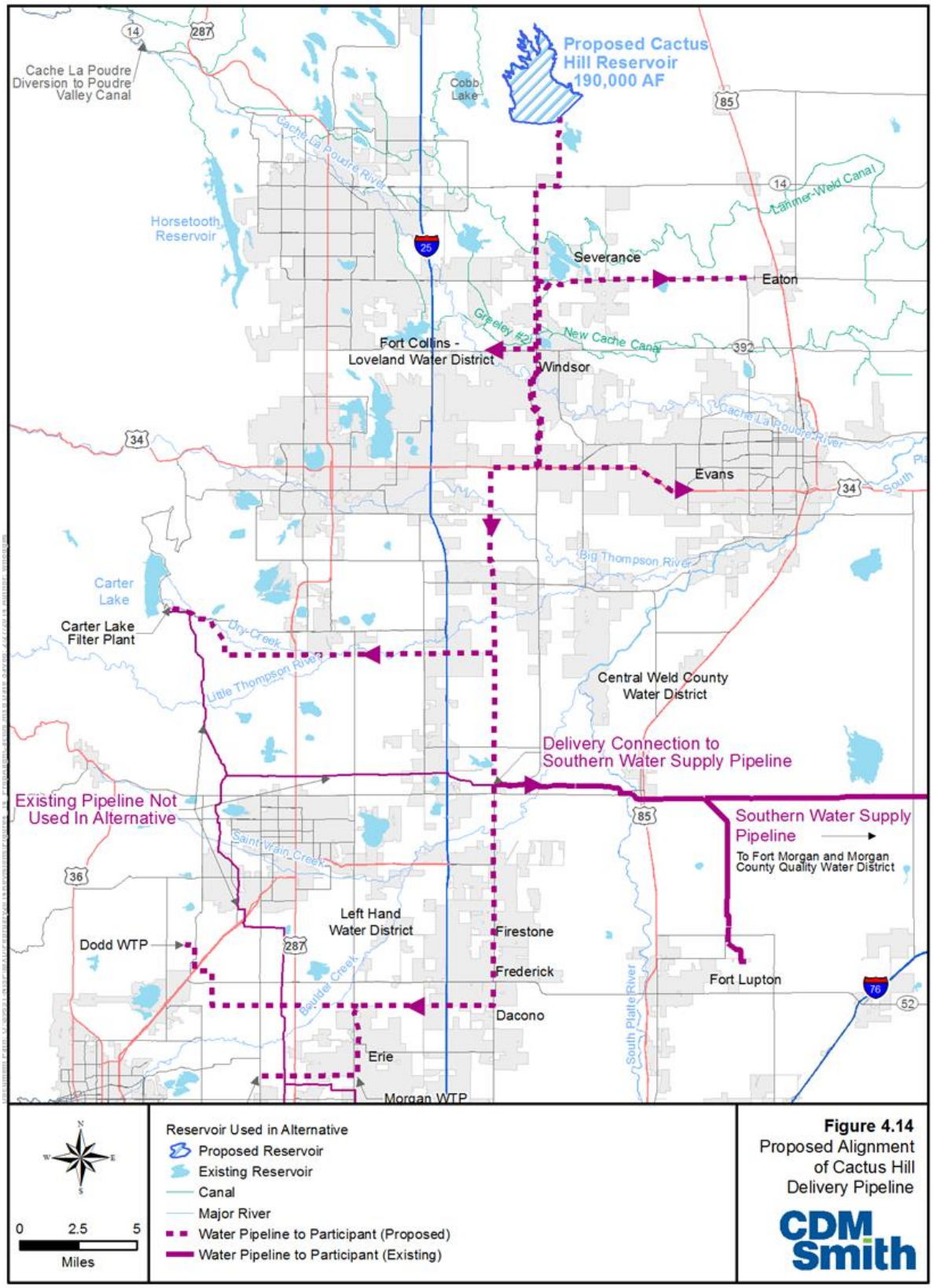


Figure 4.14
Proposed Alignment of Cactus Hill Delivery Pipeline

As shown in Figure 4.14, the proposed Cactus Hill delivery pipeline would have a connection to the existing SWSP to deliver water to NISP Participants south and east of Carter Lake. However, Cactus Hill may not have the same water quality as Glade Reservoir and may therefore have different treatment requirements. The District assumes that a parallel pipeline would be necessary to avoid diminishing water quality in the SWSP to the west of Fort Lupton. The parallel pipeline would likely be impractical for Fort Morgan and MCQWD; therefore, those entities would probably mix their NISP water in the SWSP even if water from Cactus Hill was of somewhat lower quality

4.3.2 SPWCP Larimer Weld and New Cache Pipelines

The infrastructure components of the SPWCP Larimer Weld and New Cache Pipelines would be exactly the same for Alternatives 3 and 4 as described for Alternative 2 in Section 3.3.3. Delivery volumes from the South Platte River or Galeton Reservoir to Larimer Weld and New Cache are summarized in Section 6.

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Section 5

Deliveries of NISP Water to Project Participants

This section describes current estimates of the means, timing, and rates of delivery of NISP water to the project Participants under the three NISP action alternatives. Associated infrastructure was described in Sections 3 and 4.

The firm yield requested by the 15 NISP Participants is 40,000 AFY, as shown in Table 1.1. For SDEIS analyses, the demand was modeled at 42,000 AFY, an increase of 5 percent to account for system losses during delivery and storage. **Table 5.1** shows the distribution of the 40,000 AFY demand over the 12 months of the year, the additional 5 percent, and the modeled demand pattern.

Table 5.1. NISP Participants' Monthly Firm Yield Demand, Applied Losses, and Modeled Demand

Month	NISP Participants Demand [AF]	5 Percent Applied Losses [AF]	Modeled NISP Demand [AF]
Nov	2,200	110	2,310
Dec	2,200	110	2,310
Jan	2,000	100	2,100
Feb	1,800	90	1,890
Mar	2,200	110	2,310
Apr	3,200	160	3,360
May	4,000	200	4,200
Jun	5,000	250	5,250
Jul	5,600	280	5,880
Aug	4,600	230	4,830
Sep	4,000	200	4,200
Oct	3,200	160	3,360
TOTAL	**40,000**	**2,000**	**42,000**

As shown in Table 5.1, the NISP alternatives modeling used a typical seasonal municipal demand distribution representing the best estimate of the NISP Participants' anticipated water use at the time of the hydrologic modeling for NEPA analyses. However, the individual Participants may not request and use exactly the same amounts of NISP water every year, depending on demands, hydrologic conditions, and other factors. Each Participant would own a capacity allocation in the primary reservoir (Glade or Cactus Hill). The Participant would be able to manage its storage account and carry over water as necessary.

In addition, the decree for the SPWCP water rights for diversions from the South Platte River includes the following provision:

> Northern District proposes to use, reuse, and successively use the appropriated water, including to extinction. Through exchanges and direct pumping from the Cache la Poudre and South Platte Rivers, Northern District will recapture and account for return flows from water yielded by the SPWCP and re-apply and reuse the water for…beneficial purposes…Prior to any recapture, reuse or successive use of water originally diverted under the water rights decreed [in Consolidated Case No. 92CW130], Northern District will obtain approval of the Division Engineer of the method for accounting for such recapture, reuse and successive use of water.

For NEPA analysis, project alternatives were conservatively modeled as if there were no return flows from NISP, including potential recapture and reuse from the SPWCP. This approach to the modeling and yield analyses limited the SPWCP water supply to the amounts physically and legally available for in-priority diversion from the South Platte River. As a result, the modeling predicts greater adverse effects on the South Platte River by relying on new diversions rather than incorporating the recapture of return flows. If, under actual project operations, some of the return flows accruing to the river from the use of SPWCP are able to be recaptured and reused, adverse effects would be less than modeled downstream of NISP diversions from the South Platte River.

5.1 Alternative 2 Deliveries to NISP Participants

The following sections describe current estimates of the means, timing, and rates of delivery of NISP water to the project Participants under Alternative 2 with the Reclamation Contract Option and the Reclamation No Contract Option.

5.1.1 Alternative 2 Deliveries Under the Reclamation Contract Option

For Alternative 2 with the Reclamation Contract Option, NISP water would be delivered to project Participants by direct pipeline connection to the Participant's water treatment facility or the raw water conveyance to the water treatment facility or by release from Carter Lake to existing treatment and delivery infrastructure. Each of these delivery mechanisms is described in the sections that follow. Delivery patterns used in post-processing analyses for the Reclamation Contract Option are consistent with the monthly demand distribution shown in Table 5.1 above.

5.1.1.1 Deliveries to FCLWD, Evans, Eaton, Severance, and Windsor

Under the Reclamation Contract Option for Alternative 2, deliveries from Glade Reservoir to Participants FCLWD, Evans, Eaton, Severance, and Windsor would be made as follows:

(1) Delivery to FCLWD (3,000 AFY) using own capacity in the existing PVP by direct connection from Glade Reservoir.

(2) Delivery to Evans (1,600 AFY) via the Bellvue Filter Plant. The mechanism of delivery will be determined in consultation with plant operator for the City of Greeley, but options include the following:

   (a) Direct pipeline connection from the outlet works of Glade Reservoir to the treatment plant headworks

   (b) Release of water from Glade Reservoir to the Poudre River and diversion by exchange at the Greeley Filters Pipeline intake to the Bellvue Filter Plant a short distance upstream.

(3) Delivery to Eaton, Severance, and Windsor (5,900 AFY) by direct pipeline connection from Glade Reservoir to the Soldier Canyon Filter Plant.

The aggregated delivery pattern for these five NISP Participants, totaling 10,500 AFY, is shown in **Table 5.2**. The pattern is the same under 2010 current conditions hydrology and 2050 future conditions hydrology.

Table 5.2. Average NISP Delivery Pattern to Participants FCLWD, Evans, Eaton, Severance, and Windsor, Alternative 2, Reclamation Contract Option

Month	Monthly Average Delivery [AF]
November	580
December	580
January	520
February	470
March	580
April	840
May	1,050
June	1,310
July	1,470
August	1,210
September	1,050
October	840
TOTAL	**10,500**

5.1.1.2 Deliveries to Erie, Lafayette, Frederick, Firestone, Dacono, Fort Lupton, Fort Morgan, LHWD, CWCWD, and MCQWD

NISP Participants Erie, Lafayette, Frederick, Firestone, Dacono, Fort Lupton, Fort Morgan, LHWD, CWCWD, and MCQWD would receive releases of water from Carter Lake to existing treatment and delivery infrastructure (see Section 3.3.4) under the Reclamation Contract Option for Alternative 2.

Carter Lake Releases to NISP Participants

The estimated pattern of average monthly NISP delivery releases from Carter Lake (29,500 AFY) was based on the pattern assumed for modeling of NISP impacts to Horsetooth Reservoir and Carter Lake (Pineda and Brouwer 2006). This pattern was derived from the modeled NISP demand pattern shown in Table 5.1, assuming a constant proportion of the total demand was delivered each month (29,500/40,000 = 73.75 percent). **Table 5.3** shows the assumed pattern of average monthly deliveries from Carter Lake to NISP Participants; the pattern is the same under 2010 current conditions and 2050 future conditions.

Table 5.3. Average Delivery Pattern to NISP Participants from Carter Lake, Alternative 2, Reclamation Contract Option

Month	Monthly Average Delivery [AF]
November	1,620
December	1,620
January	1,480
February	1,330
March	1,620
April	2,360
May	2,950
June	3,690
July	4,130
August	3,390
September	2,950
October	2,360
TOTAL	**29,500**

NISP Repayment of Exchange to C-BT

As described in Section 3.4.1, the District assumes that Reclamation would impose a 1 percent (295 AFY) surcharge for the 29,500 AFY exchange with C-BT, which would require NISP to deliver 29,800 AFY back to the C-BT system. NISP would return water to C-BT by several means, as follows:

1. NISP water would be substituted for releases of water from Horsetooth Reservoir via the Hansen Supply Canal to the Poudre River (direct exchange). Timing of the demand for C-BT releases through Hansen would need to occur at the same time divertible flows are available at the PVC for NISP.

2. NISP water from Glade Reservoir would be released and substituted for releases of water from Horsetooth Reservoir via the Hansen Supply Canal to the Poudre River or the PVC.

3. Glade Reservoir delivers water to Horsetooth Reservoir by pipeline as described in Section 3.4.1.

The components of the proposed NISP/C-BT exchange are summarized in **Tables 5.4 and 5.5** below for Alternative 2 with the current and future conditions hydrology.

Table 5.4. Proposed NISP/C-BT Exchange, Alternative 2 with Current Conditions, Reclamation Contract Option, IY 1950-2005

Month	Carter Releases to NISP Participants [AF]	NISP/C-BT Direct Exchange [AF]	Glade Reservoir release to Poudre River/PVC [AF]	Glade-to-Horsetooth Pumping [AF]	Total Glade Reservoir release or NISP/C-BT direct exchange [AF]
November	1,620	0	0	160	160
December	1,620	0	0	95	95
January	1,480	0	0	68	68
February	1,330	0	0	36	36
March	1,620	0	0	31	31
April	2,360	49	160	0	210
May	2,950	1,300	1,800	0	3,000
June	3,690	1,400	590	0	2,000
July	4,130	3,700	16,400	0	20,100
August	3,390	1,200	2,400	0	3,600
September	2,950	96	210	0	310
October	2,360	0	190	0	190
TOTAL	**29,500**	**7,700**	**21,700**	**390**	**29,800**

Table 5.5. Proposed NISP/C-BT Exchange, Alternative 2 with Future Conditions, Reclamation Contract Option, IY 1950-2005

Month	Carter Releases to NISP Participants [AF]	NISP/C-BT Direct Exchange [AF]	Glade Reservoir release to Poudre River/PVC [AF]	Glade-to-Horsetooth Pumping [AF]	Total Glade Reservoir release or NISP/C-BT direct exchange [AF]
November	1,620	0	0	710	710
December	1,620	0	0	670	670
January	1,480	0	0	550	550
February	1,330	0	0	240	240
March	1,620	0	0	150	150
April	2,360	140	300	110	550
May	2,950	1,400	1,600	110	3,200
June	3,690	1,400	550	79	2,000
July	4,130	4,100	13,300	25	17,400
August	3,390	1,200	2,000	0	3,200
September	2,950	320	300	0	610
October	2,360	1	620	0	620
TOTAL	**29,500**	**8,500**	**18,600**	**2,600**	**29,800**

5.1.2 Alternative 2 Deliveries under Reclamation No Contract Option

Section 3.3.1 describes the Carter Pipeline that would be constructed to deliver water to NISP Participants under the Reclamation No Contract Option for Alternative 2. The NISP demand pattern input for SDEIS modeling—adjusted to remove 5 percent added to account for various losses—represents the current best estimate of flows through the Carter Pipeline. This demand pattern is shown in **Table 5.6** below.

Table 5.6. Estimated Distribution of Carter Pipeline Deliveries to NISP Participants, Alternative 2, Reclamation No Contract Option

Month	Estimated Carter Pipeline Delivery (AF)
November	2,200
December	2,200
January	2,000
February	1,800
March	2,200
April	3,200
May	4,000
June	5,000
July	5,600
August	4,600
September	4,000
October	3,200
TOTAL	**40,000**

5.2 Alternative 3 and Alternative 4 Deliveries to NISP Participants

Section 4.3.1 describes the Cactus Hill delivery pipeline, which would deliver NISP water to the project Participants under Alternatives 3 and 4. This pipeline would have a general north-south alignment from Cactus Hill Reservoir to a point just south of Dacono directly crossing NISP Participants Windsor,

Firestone, Frederick, and Dacono. Branch pipelines would deliver raw water to Severance and Eaton, to CWCWD, and to Erie; other turnouts would deliver raw water to Evans and FCLWD. South of the branch to CWCWD, a connection to the existing SWSP would deliver water to Fort Lupton, Fort Morgan, and MCQWD. At Erie, the pipeline would bifurcate again, with a branch south and then west to Lafayette, and a branch west then north to LHWD. As shown in **Table 5.7**, the estimated distribution pattern for the Cactus Hill delivery pipeline is consistent with the modeled NISP demand pattern as well as the delivery distribution for the Carter Pipeline.

Table 5.7. Estimated Distribution of Cactus Hill Deliveries to NISP Participants, Alternatives 3 and 4

Month	Estimated Cactus Hill Pipeline Delivery (AF)
November	2,200
December	2,200
January	2,000
February	1,800
March	2,200
April	3,200
May	4,000
June	5,000
July	5,600
August	4,600
September	4,000
October	3,200
TOTAL	**40,000**

Section 6
SPWCP Exchanges

As described in Section 2.1, Section 3.3.2, and Section 4.3.2, NISP proposes to generate part of the project yield for all three action alternatives through exchanges with the Larimer Weld and New Cache irrigation systems. South Platte River water would be delivered via the proposed SPWCP pipeline system to a single turnout to the Larimer and Weld Canal and a single turnout to the New Cache Canal. The proposed turnout to the New Cache Canal would be located between Highway 85 and WCR 41, near Lucerne, and the proposed turnout to the Larimer Weld Canal would be located between Highway 85 and WCR 39, southeast of Ault. In exchange, NISP would be able to divert equivalent amounts of Poudre River water. These proposed exchanges were decreed as part of the SPWCP water rights in Consolidated Case No. 92CW130.

The following sections summarize (a) the simulated average monthly NISP diversions by direct flow and reservoir exchange with the Larimer Weld and New Cache systems, and (b) the simulated average monthly SPWCP deliveries to Larimer Weld and New Cache for the IY 1950-2005 study period. SPWCP deliveries are anticipated to be the same under either the Reclamation Contract Option or the Reclamation No Contract Option for Alternative 2, as those options only affect the mechanism of delivering water to the NISP Participants. Only one scenario each is evaluated for Alternatives 3 and 4, i.e., neither alternative includes a Reclamation contract.

6.1 Proposed NISP Diversions of Water Exchanged from Larimer Weld and New Cache Irrigation Systems

For all action alternatives, NISP proposes to divert direct flow exchange water from the Larimer Weld Canal and New Cache Canal as well as reservoir exchange water from Terry Lake, Big Windsor Reservoir, and Timnath Reservoir. The following sections summarize modeling estimates of these proposed diversions. These SPWCP direct flow and reservoir storage exchange diversions are also captured in the figures illustrating PVC headgate diversions in preceding sections (Figures 3.4 through 3.7 for Alternative 2; Figures 4.1 and 4.2 for Alternative 3; and Figures 4.3 and 4.4 for Alternative 4).

6.1.1 Proposed NISP Diversions by Exchange on Direct Flow Water Rights

Alternatives 2 and 3 propose exchanging the direct flow water from Larimer Weld and New Cache upstream to the PVC. For Alternative 4, the diversion of New Cache direct flow irrigation water by exchange to NISP would occur at the New Cache Canal headgate, and the Larimer Weld direct flow exchange water would be exchanged upstream to the PVC for immediate use or diversion to storage.

6.1.1.1 Alternatives 2 and 3

Under Alternatives 2 and 3, the Larimer Weld and New Cache direct flow water used by NISP would be exchanged upstream from the canal headgates to PVC. From there, the routing of the exchange water varies by scenario, as follows:

- Alternative 2, Reclamation Contract Option – Direct flow exchange water diverted at the PVC and routed to storage or immediate use, or left in the river for exchange with C-BT.
- Alternative 2, Reclamation No Contract Option – Direct flow exchange water diverted at the PVC and routed to storage or immediate use.
- Alternative 3 – Direct flow exchange water diverted at the PVC and routed to storage or immediate use.

Tables 6.1 and 6.2 summarize simulated Larimer Weld and New Cache direct flow water exchanged to the PVC for NISP under Alternatives 2 and 3 with current and future conditions hydrology.

Table 6.1. Average Monthly Larimer Weld and New Cache Direct Flow Water Exchanged to the PVC for NISP, Alternative 2, IY 1950-2005

Month	Alternative 2 with Current Conditions Hydrology (NISP Run 3a)				Alternative 2 with Future Conditions Hydrology (NISP Run 4a)			
	Number of Years with Simulated NISP Diversions at PVC (out of 56)	Min [AF]	Max [AF]	Avg [AF]	Number of Years with Simulated NISP Diversions at PVC (out of 56)	Min [AF]	Max [AF]	Avg [AF]
November	0	0	0	0	0	0	0	0
December	0	0	0	0	0	0	0	0
January	0	0	0	0	0	0	0	0
February	0	0	0	0	0	0	0	0
March	0	0	0	0	0	0	0	0
April	17	0	350	48	18	0	560	76
May	48	0	12,300	5,300	50	0	12,300	5,600
June	51	0	11,900	5,700	51	0	11,900	6.200
July	49	0	12,300	4,500	50	0	12,300	5,000
August	40	0	10,700	2,700	43	0	9,200	2,500
September	41	0	3,000	950	45	0	3,000	930
October	19	0	16	4	24	0	17	5
ANNUAL	—	**700**	**35,500**	**19,200**	—	**720**	**34,300**	**20,500**

Table 6.2. Average Monthly Larimer Weld and New Cache Direct Flow Water Exchanged to the PVC for NISP, Alternative 3, IY 1950-2005

Month	Alternative 3 with Current Conditions Hydrology (NISP Run 3b1)				Alternative 3 with Future Conditions Hydrology (NISP Run 4b1)			
	Number of Years with Simulated NISP Diversions at PVC (out of 56)	Min [AF]	Max [AF]	Avg [AF]	Number of Years with Simulated NISP Diversions at PVC (out of 56)	Min [AF]	Max [AF]	Avg [AF]
November	0	0	0	0	0	0	0	0
December	0	0	0	0	0	0	0	0
January	0	0	0	0	0	0	0	0
February	0	0	0	0	0	0	0	0
March	0	0	0	0	0	0	0	0
April	17	0	350	43	19	0	560	72
May	48	0	12,300	5,300	50	0	12,300	5,600
June	50	0	11,900	6,100	48	0	11,900	6.600
July	52	0	12,300	5,600	51	0	12,300	6,200
August	44	0	10,700	2,900	4	0	9,200	2,400
September	38	0	3,000	850	42	0	3,000	860
October	17	0	16	4	24	0	17	5
ANNUAL	—	**700**	**35,600**	**20,700**	—	**780**	**34,100**	**21,800**

6.1.1.2 Alternative 4

Alternative 4 would keep the Larimer Weld and New Cache direct flow exchange demands separate rather than aggregating them. As modeled for the SDEIS, the New Cache direct flow water exchanged to NISP was diverted at the New Cache headgate downstream of Fort Collins and pumped directly to storage in Cactus Hill. The modeled Larimer Weld water was exchanged upstream to the PVC and used to meet immediate Participant demands, bypassing storage in Cactus Hill Reservoir. **Tables 6.3 and 6.4** summarize simulated Larimer Weld and New Cache direct flow exchange water for Alternative 4 with current and future conditions hydrology.

Table 6.3. Larimer Weld and New Cache Direct Flow Water Exchanged to NISP for Storage or Immediate Use, Alternative 4 with Current Conditions (NISP Run 3b2)

Month	Average Monthly New Cache Direct Flow Exchange Water to Storage in Cactus Hill				Average Monthly Larimer Weld Direct Flow Exchange Water to Immediate Use				Average Monthly Larimer Weld and New Cache Direct Flow Water to NISP			
	Number of Years with Simulated NISP Diversions at New Cache Headgate (out of 56)	Min [AF]	Max [AF]	Avg [AF]	Number of Years with Simulated NISP Diversions at PVC (out of 56)	Min [AF]	Max [AF]	Avg [AF]	Number of Years with Simulated NISP Diversions (out of 56)	Min [AF]	Max [AF]	Avg [AF]
November	0	0	0	0	0	0	0	0	0	0	0	0
December	0	0	0	0	0	0	0	0	0	0	0	0
January	0	0	0	0	0	0	0	0	0	0	0	0
February	0	0	0	0	0	0	0	0	0	0	0	0
March	0	0	0	0	0	0	0	0	0	0	0	0
April	0	0	0	0	13	0	320	47	13	0	320	47
May	48	0	6,100	3,500	45	0	4,200	1,900	50	0	10,300	5,300
June	52	0	6,000	3,800	49	0	5,300	2,800	52	0	11,200	6,500
July	49	0	6,100	2,300	47	0	5,900	4,600	50	0	12,000	6,900
August	30	0	5,700	1,400	25	0	4,800	940	30	0	9,000	2,300
September	11	0	1,700	39	0	0	0	0	11	0	1,700	39
October	0	0	0	0	20	0	16	4	20	0	16	4
ANNUAL	**—**	**5**	**20,400**	**11,000**	**—**	**2,539**	**18,000**	**10,200**	**—**	**2,856**	**33,600**	**21,100**

Table 6.4. Larimer Weld and New Cache Direct Flow Water Exchanged to NISP for Storage or Immediate Use, Alternative 4 with Future Conditions (NISP Run 4b2)

Month	Average Monthly New Cache Direct Flow Exchange Water to Storage in Cactus Hill				Average Monthly Larimer Weld Direct Flow Exchange Water to Immediate Use				Average Monthly Larimer Weld and New Cache Direct Flow Water to NISP			
	Number of Years with Simulated NISP Diversions at New Cache Headgate (out of 56)	Min [AF]	Max [AF]	Avg [AF]	Number of Years with Simulated NISP Diversions at PVC (out of 56)	Min [AF]	Max [AF]	Avg [AF]	Number of Years with Simulated NISP Diversions (out of 56)	Min [AF]	Max [AF]	Avg [AF]
November	0	0	0	0	0	0	0	0	0	0	0	0
December	0	0	0	0	0	0	0	0	0	0	0	0
January	0	0	0	0	0	0	0	0	0	0	0	0
February	0	0	0	0	0	0	0	0	0	0	0	0
March	0	0	0	0	0	0	0	0	0	0	0	0
April	0	0	0	0	13	0	560	62	13	0	560	62
May	49	0	6,100	3,600	48	0	4,200	2,000	51	0	10,300	5,600
June	52	0	6,000	4,200	49	0	5,300	2,900	53	0	11,200	7,100
July	47	0	6,100	3,000	40	0	5,900	3,800	47	0	12,000	6,800
August	33	0	6,100	1,500	25	0	4,400	680	33	0	9,200	2,200
September	12	0	290	22	2	0	390	7	12	0	420	30
October	0	0	0	0	23	0	17	5	23	0	17	5
ANNUAL	**—**	**78**	**20,600**	**12,300**	**—**	**1,700**	**15,000**	**9,400**	**—**	**2,400**	**32,000**	**21,800**

6.1.2 Proposed NISP Diversions by Exchange on Storage Water Rights

For all three action alternatives, SPWCP exchange water from Terry Lake, Big Windsor Reservoir, and Timnath Reservoir would be diverted by NISP at the PVC and routed to storage in Glade Reservoir (Alternative 2) or Cactus Hill Reservoir (Alternatives 3 and 4). See Figure 1.1 for the relative locations of these existing and proposed reservoirs. Terry Lake is filled by the Little Cache Canal and delivers water to the Larimer Weld Canal. Big Windsor Reservoir is filled by the Larimer Weld Canal, but is located on the downhill side of the canal and therefore cannot release stored water directly back to the Larimer Weld Canal. As a result, water from Big Windsor Reservoir is generally released to the New Cache Canal as part of an exchange. Timnath Reservoir has its own inlet canal and releases stored water to the New Cache Canal and Lake Canal. The PVC diversions described in preceding sections include the water associated with the proposed exchanges with these three reservoirs; the tables in the sections below break out the reservoir exchanges into the component sources.

6.1.2.1 Alternative 2

Tables 6.5 through 6.7 summarize NISP proposed diversions by exchange with Terry Lake, Big Windsor Reservoir, and Timnath Reservoir under Alternative 2.

Table 6.5. Estimated NISP Diversions by Exchange with Terry Lake, Alternative 2, IY 1950-2005

Month	Alternative 2 with Current Conditions Hydrology (NISP Run 3a)				Alternative 2 with Future Conditions Hydrology (NISP Run 4a)			
	Number of Years with Simulated NISP Diversions at PVC (out of 56)	Min [AF]	Max [AF]	Avg [AF]	Number of Years with Simulated NISP Diversions at PVC (out of 56)	Min [AF]	Max [AF]	Avg [AF]
November	0	0	0	0	0	0	0	0
December	2	0	1,300	27	0	0	0	0
January	1	0	3,000	53	2	0	490	14
February	2	0	230	7	1	0	1,000	18
March	7	0	2,300	140	4	0	2,300	94
April	20	0	4,500	890	20	0	5,200	930
May	24	0	5,800	1,300	26	0	5,700	1,500
June	13	0	5,800	640	13	0	5,800	620
July	0	0	0	0	0	0	0	0
August	0	0	0	0	0	0	0	0
September	0	0	0	0	0	0	0	0
October	2	0	1,800	42	1	0	1,700	31
ANNUAL	—	**0**	**5,800**	**3,100**	—	**0**	**5,800**	**3,200**

Table 6.6. Estimated NISP Diversions by Exchange with Big Windsor Reservoir, Alternative 2, IY 1950-2005

Month	Alternative 2 with Current Conditions Hydrology (NISP Run 3a)				Alternative 2 with Future Conditions Hydrology (NISP Run 4a)			
	Number of Years with Simulated NISP Diversions at PVC (out of 56)	Min [AF]	Max [AF]	Avg [AF]	Number of Years with Simulated NISP Diversions at PVC (out of 56)	Min [AF]	Max [AF]	Avg [AF]
November	0	0	0	0	0	0	0	0
December	0	0	0	0	0	0	0	0
January	0	0	0	0	0	0	0	0
February	0	0	0	0	0	0	0	0
March	0	0	0	0	0	0	0	0
April	12	0	5,300	450	13	0	4,600	490
May	19	0	5,200	500	16	0	4,500	550
June	9	0	4,400	320	7	0	4,500	320
July	0	0	0	0	0	0	0	0
August	0	0	0	0	0	0	0	0
September	0	0	0	0	0	0	0	0
October	1	0	54	1	0	0	0	0
ANNUAL	**—**	**0**	**5,600**	**1,300**	**—**	**0**	**5,600**	**1,400**

Table 6.7. Estimated NISP Diversions by Exchange with Timnath Reservoir, Alternative 2, IY 1950-2005

Month	Alternative 2 with Current Conditions Hydrology (NISP Run 3a)				Alternative 2 with Future Conditions Hydrology (NISP Run 4a)			
	Number of Years with Simulated NISP Diversions at PVC (out of 56)	Min [AF]	Max [AF]	Avg [AF]	Number of Years with Simulated NISP Diversions at PVC (out of 56)	Min [AF]	Max [AF]	Avg [AF]
November	0	0	0	0	0	0	0	0
December	0	0	0	0	0	0	0	0
January	0	0	0	0	0	0	0	0
February	0	0	0	0	0	0	0	0
March	0	0	0	0	0	0	0	0
April	0	0	0	0	1	0	1,900	34
May	11	0	2,100	190	8	0	1,900	120
June	9	0	2,200	200	7	0	2,000	160
July	0	0	0	0	0	0	0	0
August	0	0	0	0	0	0	0	0
September	0	0	0	0	0	0	0	0
October	2	0	2,000	50	1	0	1,200	21
ANNUAL	**—**	**0**	**2,200**	**440**	**—**	**0**	**2,000**	**330**

6.1.2.2 Alternative 3

Tables 6.8 through 6.10 summarize proposed NISP diversions by exchange with Terry Lake, Big Windsor Reservoir, and Timnath Reservoir under Alternative 3.

Table 6.8. Estimated NISP Diversions by Exchange with Terry Lake, Alternative 3, IY 1950-2005

Month	Alternative 3 with Current Conditions Hydrology (NISP Run 3b1)				Alternative 3 with Future Conditions Hydrology (NISP Run 4b1)			
	Number of Years with Simulated NISP Diversions at PVC (out of 56)	Min [AF]	Max [AF]	Avg [AF]	Number of Years with Simulated NISP Diversions at PVC (out of 56)	Min [AF]	Max [AF]	Avg [AF]
November	0	0	0	0	0	0	0	0
December	2	0	1,200	25	0	0	0	0
January	1	0	3,100	55	1	0	530	9
February	2	0	34	1	1	0	220	4
March	8	0	2,200	110	4	0	2,100	89
April	25	0	5,400	990	22	0	4,000	840
May	23	0	5,800	1,300	27	0	5,700	1,300
June	15	0	5,800	740	11	0	5,800	600
July	0	0	0	0	0	0	0	0
August	0	0	0	0	0	0	0	0
September	0	0	0	0	0	0	0	0
October	4	0	1,800	72	1	0	1,900	33
ANNUAL	**—**	**0**	**5,800**	**3,300**	**—**	**0**	**5,800**	**2,900**

Table 6.9. Estimated NISP Diversions by Exchange with Windsor Reservoir, Alternative 3, IY 1950-2005

Month	Alternative 3 with Current Conditions Hydrology (NISP Run 3b1)				Alternative 3 with Future Conditions Hydrology (NISP Run 4b1)			
	Number of Years with Simulated NISP Diversions at PVC (out of 56)	Min [AF]	Max [AF]	Avg [AF]	Number of Years with Simulated NISP Diversions at PVC (out of 56)	Min [AF]	Max [AF]	Avg [AF]
November	0	0	0	0	0	0	0	0
December	0	0	0	0	0	0	0	0
January	0	0	0	0	0	0	0	0
February	0	0	0	0	0	0	0	0
March	0	0	0	0	0	0	0	0
April	14	0	4,800	500	15	0	4,400	410
May	20	0	3,900	510	16	0	4,900	470
June	9	0	5,600	370	8	0	4,400	250
July	0	0	0	0	0	0	0	0
August	0	0	0	0	0	0	0	0
September	0	0	0	0	0	0	0	0
October	1	0	53	1	1	0	140	3
ANNUAL	**—**	**0**	**5,600**	**1,400**	**—**	**0**	**4,900**	**1,100**

Table 6.10. Estimated NISP Diversions by Exchange with Timnath Reservoir, Alternative 3, IY 1950-2005

Month	Alternative 3 with Current Conditions Hydrology (NISP Run 3b1)				Alternative 3 with Future Conditions Hydrology (NISP Run 4b1)			
	Number of Years with Simulated NISP Diversions at PVC (out of 56)	Min [AF]	Max [AF]	Avg [AF]	Number of Years with Simulated NISP Diversions at PVC (out of 56)	Min [AF]	Max [AF]	Avg [AF]
November	0	0	0	0	0	0	0	0
December	0	0	0	0	0	0	0	0
January	0	0	0	0	0	0	0	0
February	0	0	0	0	0	0	0	0
March	0	0	0	0	0	0	0	0
April	0	0	0	0	1	0	1,900	34
May	7	0	2,100	140	7	0	1,900	99
June	10	0	2,100	220	8	0	2,000	140
July	0	0	0	0	0	0	0	0
August	0	0	0	0	0	0	0	0
September	0	0	0	0	0	0	0	0
October	2	0	2,000	68	1	0	1,400	25
ANNUAL	**—**	**0**	**2,100**	**420**	**—**	**0**	**2,000**	**300**

6.1.2.3 Alternative 4

Tables 6.11 through 6.13 summarize proposed NISP diversions by exchange with Terry Lake, Big Windsor Reservoir, and Timnath Reservoir under Alternative 4.

Table 6.11. Estimated NISP Diversions by Exchange with Terry Lake, Alternative 4, IY 1950-2005

Month	Alternative 4 with Current Conditions Hydrology (NISP Run 3b2)				Alternative 4 with Future Conditions Hydrology (NISP Run 4b2)			
	Number of Years with Simulated NISP Diversions at PVC (out of 56)	Min [AF]	Max [AF]	Avg [AF]	Number of Years with Simulated NISP Diversions at PVC (out of 56)	Min [AF]	Max [AF]	Avg [AF]
November	0	0	0	0	0	0	0	0
December	2	0	1,200	22	0	0	0	0
January	2	0	3,000	53	1	0	470	8
February	2	0	38	1	1	0	980	17
March	8	0	2,200	100	5	0	2,100	100
April	25	0	5,800	1,200	27	0	4,200	1,100
May	27	0	5,800	1,600	33	0	5,800	1,800
June	16	0	5,800	860	15	0	5,800	660
July	0	0	0	0	0	0	0	0
August	0	0	0	0	0	0	0	0
September	0	0	0	0	0	0	0	0
October	2	0	1,800	57	2	0	1,900	62
ANNUAL	**—**	**0**	**5,800**	**4,000**	**—**	**0**	**5,800**	**3,800**

Table 6.12. Estimated NISP Diversions by Exchange with Big Windsor Reservoir, Alternative 4, IY 1950-2005

Month	Alternative 4 with Current Conditions Hydrology (NISP Run 3b2)				Alternative 4 with Future Conditions Hydrology (NISP Run 4b2)			
	Number of Years with Simulated NISP Diversions at PVC (out of 56)	Min [AF]	Max [AF]	Avg [AF]	Number of Years with Simulated NISP Diversions at PVC (out of 56)	Min [AF]	Max [AF]	Avg [AF]
November	0	0	0	0	0	0	0	0
December	0	0	0	0	0	0	0	0
January	0	0	0	0	0	0	0	0
February	0	0	0	0	0	0	0	0
March	0	0	0	0	0	0	0	0
April	15	0	4,600	590	13	0	4,700	480
May	21	0	5,600	840	19	0	5,600	580
June	11	0	3,800	280	9	0	3,100	260
July	0	0	0	0	0	0	0	0
August	0	0	0	0	0	0	0	0
September	0	0	0	0	0	0	0	0
October	1	0	380	7	1	0	570	10
ANNUAL	**—**	**0**	**5,600**	**1,700**	**—**	**0**	**5,600**	**1,300**

Table 6.13. Estimated NISP Diversions by Exchange with Timnath Reservoir, Alternative 4, IY 1950-2005

Month	Alternative 4 with Current Conditions Hydrology (NISP Run 3b2)				Alternative 4 with Future Conditions Hydrology (NISP Run 4b2)			
	Number of Years with Simulated NISP Diversions at PVC (out of 56)	Min [AF]	Max [AF]	Avg [AF]	Number of Years with Simulated NISP Diversions at PVC (out of 56)	Min [AF]	Max [AF]	Avg [AF]
November	0	0	0	0	0	0	0	0
December	0	0	0	0	0	0	0	0
January	0	0	0	0	0	0	0	0
February	0	0	0	0	0	0	0	0
March	0	0	0	0	0	0	0	0
April	0	0	0	0	1	0	1,900	34
May	12	0	2,100	250	11	0	2,100	170
June	10	0	2,000	190	12	0	2,000	180
July	0	0	0	0	0	0	0	0
August	0	0	0	0	0	0	0	0
September	0	0	0	0	0	0	0	0
October	2	0	2,000	67	1	0	1,100	20
ANNUAL	**—**	**0**	**2,200**	**510**	**—**	**0**	**2,100**	**410**

6.2 Proposed NISP Deliveries of Water to Larimer Weld and New Cache

For all action alternatives, NISP proposes to use the SPWCP infrastructure to deliver water to the Larimer Weld and New Cache systems to complete exchanges on direct flow and reservoir water rights. The following sections summarize modeling estimates of these proposed deliveries.

6.2.1 SPWCP Deliveries to Larimer Weld

SPWCP deliveries to Larimer Weld would be made by pumping South Platte River water from Galeton Reservoir or from the South Platte pumping station at a maximum rate of 100 cfs. The tables below summarize simulated monthly average SPWCP deliveries to Larimer Weld for each action alternative under both current and future conditions.

6.2.1.1 Alternative 2

Table 6.14 summarizes average monthly and annual simulated SPWCP deliveries to the Larimer and Weld Canal for Alternative 2 with current conditions. The average deliveries are also shown as a percentage of the modeled Larimer and Weld Canal headgate diversions from the CTP Run 1 current conditions hydrology simulation. This percentage provides an estimate of how much South Platte River water would be mixing with Poudre River water in the canal, with two important caveats: (1) the point(s) of delivery from the SPWCP pipelines to the Larimer Weld Canal would be many miles downcanal from the headgate, so the ratio of South Platte River water to Poudre River water at those points and below would likely be greater; and (2) the headgate diversions are supplemented downcanal by storage releases from off-channel reservoirs, intercepted return flows, and other sources, thereby further altering the actual mixing ratios. While caution is advised for using and interpreting this data, the comparison of SPWCP deliveries to headgate diversions provides an example of the magnitude of the mixing. The same applies to the data presented in Tables 6.15 through 6.19.

Table 6.14. SPWCP Deliveries to Larimer Weld, Alternative 2 with Current Conditions (NISP Run 3a), IY 1950-2005

Month	Larimer Weld average diversions under current conditions (CTP Run 1) [AF]	Number of Years with Deliveries (out of 56)	Minimum [AF]	Maximum [AF]	Average [AF]	Average Delivery as a percentage of Larimer Weld diversions under current conditions [%]
November	630	0	0	0	0	0%
December	630	0	0	0	0	0%
January	500	0	0	0	0	0%
February	420	0	0	0	0	0%
March	1,000	0	0	0	0	0%
April	2,400	17	0	350	48	2%
May	11,300	42	0	6,100	1,900	17%
June	16,200	37	0	6,000	2,300	14%
July	25,400	33	0	6,100	2,600	10%
August	7,100	39	0	6,100	1,700	23%
September	4,000	41	0	3,000	960	24%
October	1,900	10	0	16	2	0%
ANNUAL	**71,600**	**0**	**39**	**20,500**	**9,500**	**13%**

Table 6.15 summarizes average monthly and annual simulated SPWCP deliveries to the Larimer and Weld Canal for Alternative 2 with future conditions. The average deliveries are also shown as a percentage of the Larimer and Weld Canal headgate diversions in the CTP Run 2 future conditions hydrology simulation.

Table 6.15. SPWCP Deliveries to Larimer Weld, Alternative 2 with Future Conditions (NISP Run 4a), IY 1950-2005

Month	Larimer Weld average diversions under future conditions (CTP Run 2) [AF]	Number of Years with Deliveries (out of 56)	Minimum [AF]	Maximum [AF]	Average [AF]	Average Delivery as a percentage of Larimer Weld diversions under future conditions [%]
November	720	0	0	0	0	0%
December	610	0	0	0	0	0%
January	510	0	0	0	0	0%
February	440	0	0	0	0	0%
March	1,100	0	0	0	0	0%
April	2,400	18	0	560	76	3%
May	12,300	45	0	6,100	2,100	17%
June	17,600	41	0	6,000	2,600	15%
July	23,100	34	0	6,100	2,700	12%
August	5,300	36	0	6,100	1,200	23%
September	4,000	45	0	3,000	940	23%
October	1,000	11	0	17	2	0%
ANNUAL	**69,200**	**0**	**14**	**19,400**	**9,600**	**14%**

6.2.1.2 Alternative 3

Table 6.16 summarizes average monthly and annual simulated SPWCP deliveries to the Larimer and Weld Canal for Alternative 3 with current conditions. The average deliveries are also shown as a percentage of the Larimer and Weld Canal headgate diversions in the CTP Run 1 current conditions hydrology simulation. This percentage provides an estimate of how much South Platte River water would be mixing with Poudre River water in the canal.

Table 6.16. SPWCP Deliveries to Larimer Weld, Alternative 3 with Current Conditions (NISP Run 3b1), IY 1950-2005

Month	Larimer Weld average diversions under current conditions (CTP Run 1) [AF]	Number of Years with Deliveries (out of 56)	Minimum [AF]	Maximum [AF]	Average [AF]	Average Delivery as a percentage of Larimer Weld diversions under current conditions [%]
November	630	0	0	0	0	0%
December	630	0	0	0	0	0%
January	500	0	0	0	0	0%
February	420	0	0	0	0	0%
March	1,000	0	0	0	0	0%
April	2,400	17	0	350	43	2%
May	11,300	43	0	6,100	1,900	17%
June	16,200	34	0	6,000	2,300	14%
July	25,400	38	0	6,100	3,300	13%
August	7,100	40	0	6,100	1,800	25%
September	4,000	39	0	3,000	860	21%
October	1,900	10	0	16	2	0%
ANNUAL	**71,600**	**0**	**36**	**18,500**	**10,300**	**14%**

Table 6.17 summarizes average monthly and annual simulated SPWCP deliveries to the Larimer and Weld Canal for Alternative 3 with future conditions. The average deliveries are also shown as a percentage of the Larimer and Weld Canal headgate diversions in the CTP Run 2 future conditions hydrology simulation.

Table 6.17. SPWCP Deliveries to Larimer Weld, Alternative 3 with Future Conditions (NISP Run 4b1), IY 1950-2005

Month	Larimer Weld average diversions under future conditions (CTP Run 2) [AF]	Number of Years with Deliveries (out of 56)	Minimum [AF]	Maximum [AF]	Average [AF]	Average Delivery as a percentage of Larimer Weld diversions under future conditions [%]
November	720	0	0	0	0	0%
December	610	0	0	0	0	0%
January	510	0	0	0	0	0%
February	440	0	0	0	0	0%
March	1,100	0	0	0	0	0%
April	2,400	19	0	560	72	3%
May	12,300	45	0	6,100	2,200	18%
June	17,600	41	0	6,000	2,700	15%
July	23,100	38	0	6,100	3,400	15%
August	5,300	38	0	6,100	1,300	24%
September	4,000	42	0	3,000	870	22%
October	1,000	10	0	17	2	0%
ANNUAL	**69,200**	**0**	**10**	**19,000**	**10,600**	**15%**

6.2.1.3 Alternative 4

Table 6.18 summarizes average monthly and annual simulated SPWCP deliveries to the Larimer and Weld Canal for Alternative 4 with current conditions. The average deliveries are also shown as a percentage of the Larimer and Weld Canal headgate diversions in the CTP Run 1 current conditions hydrology simulation. This percentage provides an estimate of how much South Platte River water would be mixing with Poudre River water in the canal.

Table 6.18. SPWCP Deliveries to Larimer Weld, Alternative 4 with Current Conditions (NISP Run 3b2), IY 1950-2005

Month	Larimer Weld average diversions under current conditions (CTP Run 1) [AF]	Number of Years with Deliveries (out of 56)	Minimum [AF]	Maximum [AF]	Average [AF]	Average Delivery as a percentage of Larimer Weld diversions under current conditions [%]
November	630	0	0	0	0	0%
December	630	0	0	0	0	0%
January	500	0	0	0	0	0%
February	420	0	0	0	0	0%
March	1,000	0	0	0	0	0%
April	2,400	13	0	320	47	2%
May	11,300	45	0	6,100	1,900	17%
June	16,200	49	0	6,000	2,800	18%
July	25,400	47	0	6,100	4,800	19%
August	7,100	25	0	5,000	950	13%
September	4,000	0	0	0	0	0%
October	1,900	10	0	14	2	0%
ANNUAL	**71,600**	**0**	**2,500**	**19,000**	**10,500**	**15%**

Table 6.19 summarizes average monthly and annual simulated SPWCP deliveries to the Larimer and Weld Canal for Alternative 4 with future conditions. The average deliveries are also shown as a percentage of the Larimer and Weld Canal headgate diversions in the CTP Run 2 future conditions hydrology simulation.

Table 6.19. SPWCP Deliveries to Larimer Weld, Alternative 4 with Future Conditions (NISP Run 4b2), IY 1950-2005

Month	Larimer Weld average diversions under future conditions (CTP Run 2) [AF]	Number of Years with Deliveries (out of 56)	Minimum [AF]	Maximum [AF]	Average [AF]	Average Delivery as a percentage of Larimer Weld diversions under future conditions [%]
November	720	0	0	0	0	0%
December	610	0	0	0	0	0%
January	510	0	0	0	0	0%
February	440	0	0	0	0	0%
March	1,100	0	0	0	0	0%
April	2,400	13	0	560	62	3%
May	12,300	48	0	6,100	2,100	17%
June	17,600	49	0	6,000	3,000	17%
July	23,100	40	0	6,100	3,900	17%
August	5,300	25	0	4,400	680	13%
September	4,000	2	0	390	7	0%
October	1,000	12	0	17	2	0%
ANNUAL	**69,200**	**0**	**1,700**	**16,000**	**9,700**	**14%**

6.2.2 SPWCP Deliveries to New Cache

SPWCP deliveries to New Cache would be made by pumping water from the South Platte River or by releases from Galeton Reservoir at a maximum rate of 100 cfs. The tables in the sections below summarize simulated monthly average SPWCP deliveries to New Cache for each action alternative under both current and future conditions. The same caveats discussed in Section 6.2.1.1 apply for the presentation of SPWCP deliveries to the New Cache Canal as a percentage of headgate diversions in Tables 6.20 through 6.25 below.

6.2.2.1 Alternative 2

Table 6.20 summarizes average monthly and annual simulated SPWCP deliveries to the New Cache Canal for Alternative 2 with current conditions. The average deliveries are also shown as a percentage of the New Cache Canal headgate diversions in the CTP Run 1 current conditions hydrology simulation. This percentage provides an estimate of how much South Platte River water would be mixing with Poudre River water in the canal.

Table 6.20. SPWCP Deliveries to New Cache, Alternative 2 with Current Conditions (NISP Run 3a), IY 1950-2005

Month	New Cache average diversions under current conditions (CTP Run 1) [AF]	Number of Years with Deliveries (out of 56)	Minimum [AF]	Maximum [AF]	Average [AF]	Average Delivery as a percentage of New Cache diversions under current conditions [%]
November	330	0	0	0	0	0%
December	50	0	0	0	0	0%
January	17	0	0	0	0	0%
February	2	0	0	0	0	0%
March	110	0	0	0	0	0%
April	1,200	0	0	0	0	0%
May	8,700	45	0	6,100	3,400	39%
June	12,900	45	0	6,000	3,400	27%
July	12,400	38	0	6,100	1,900	15%
August	6,400	23	0	6,100	1,100	17%
September	3,600	1	0	5	0	0%
October	590	2	0	5	0	0%
ANNUAL	**46,400**	**0**	**0**	**20,600**	**9,800**	**21%**

Table 6.21 summarizes average monthly and annual simulated SPWCP deliveries to the New Cache Canal for Alternative 2 with future conditions. The average deliveries are also shown as a percentage of the New Cache Canal headgate diversions in the CTP Run 2 future conditions hydrology simulation.

Table 6.21. SPWCP Deliveries to New Cache, Alternative 2 with Future Conditions (NISP Run 4a), IY 1950-2005

Month	New Cache average diversions under future conditions (CTP Run 2) [AF]	Number of Years with Deliveries (out of 56)	Minimum [AF]	Maximum [AF]	Average [AF]	Average Delivery as a percentage of New Cache diversions under future conditions [%]
November	370	0	0	0	0	0%
December	68	0	0	0	0	0%
January	23	0	0	0	0	0%
February	4	0	0	0	0	0%
March	100	0	0	0	0	0%
April	1,200	0	0	0	0	0%
May	8,700	47	0	6,100	3,600	41%
June	12,800	45	0	6,000	3,700	29%
July	12,400	37	0	6,100	2,400	19%
August	6,300	29	0	6,100	1,300	21%
September	3,700	0	0	0	0	0%
October	600	3	0	11	0	0%
ANNUAL	**46,300**	**0**	**0**	**20,300**	**10,900**	**24%**

6.2.2.2 Alternative 3

Table 6.22 summarizes average monthly and annual simulated SPWCP deliveries to the New Cache Canal for Alternative 3 with current conditions. The average deliveries are also shown as a percentage of the New Cache Canal headgate diversions in the CTP Run 1 current conditions hydrology simulation. This percentage provides an estimate of how much South Platte River water would be mixing with Poudre River water in the canal.

Table 6.22. SPWCP Deliveries to New Cache, Alternative 3 with Current Conditions (NISP Run 3b1), IY 1950-2005

Month	New Cache average diversions under current conditions (CTP Run 1) [AF]	Number of Years with Deliveries (out of 56)	Minimum [AF]	Maximum [AF]	Average [AF]	Average Delivery as a percentage of New Cache diversions under current conditions [%]
November	330	0	0	0	0	0%
December	50	0	0	0	0	0%
January	17	0	0	0	0	0%
February	2	0	0	0	0	0%
March	110	0	0	0	0	0%
April	1,200	0	0	0	0	0%
May	8,700	44	0	6,100	3,300	38%
June	12,900	48	0	6,000	3,800	29%
July	12,400	39	0	6,100	2,200	18%
August	6,400	29	0	6,100	1,100	18%
September	3,600	0	0	0	0	0%
October	590	0	0	0	0	0%
ANNUAL	**46,400**	**0**	**0**	**20,900**	**10,500**	**23%**

Table 6.23 summarizes average monthly and annual simulated SPWCP deliveries to the New Cache Canal for Alternative 3 with future conditions. The average deliveries are also shown as a percentage of the New Cache Canal headgate diversions in the CTP Run 2 future conditions hydrology simulation.

Table 6.23. SPWCP Deliveries to New Cache, Alternative 3 with Future Conditions (NISP Run 4b1), IY 1950-2005

Month	New Cache average diversions under future conditions (CTP Run 2) [AF]	Number of Years with Deliveries (out of 56)	Minimum [AF]	Maximum [AF]	Average [AF]	Average Delivery as a percentage of New Cache diversions under future conditions [%]
November	370	0	0	0	0	0%
December	68	0	0	0	0	0%
January	23	0	0	0	0	0%
February	4	0	0	0	0	0%
March	100	0	0	0	0	0%
April	1,200	0	0	0	0	0%
May	8,700	46	0	6,100	3,400	39%
June	12,800	45	0	6,000	3,900	30%
July	12,400	41	0	6,100	2,800	23%
August	6,300	23	0	6,100	1,200	19%
September	3,700	2	0	2	0	0%
October	600	2	0	4	0	0%
ANNUAL	**46,300**	**0**	**0**	**21,300**	**11,300**	**25%**

6.2.2.3 Alternative 4

Table 6.24 summarizes average monthly and annual simulated SPWCP deliveries to the New Cache Canal for Alternative 4 with current conditions. The average deliveries are also shown as a percentage of the New Cache Canal headgate diversions in the CTP Run 1 current conditions hydrology simulation. This percentage provides an estimate of how much South Platte River water would be mixing with Poudre River water in the canal.

Table 6.24. SPWCP Deliveries to New Cache, Alternative 4 with Current Conditions (NISP Run 3b2), IY 1950-2005

Month	New Cache average diversions under current conditions (CTP Run 1) [AF]	Number of Years with Deliveries (out of 56)	Minimum [AF]	Maximum [AF]	Average [AF]	Average Delivery as a percentage of New Cache diversions under current conditions [%]
November	330	0	0	0	0	0%
December	50	0	0	0	0	0%
January	17	0	0	0	0	0%
February	2	0	0	0	0	0%
March	110	0	0	0	0	0%
April	1,200	0	0	0	0	0%
May	8,700	48	0	6,100	3,500	40%
June	12,900	52	0	6,000	3,800	29%
July	12,400	49	0	6,100	2,300	19%
August	6,400	30	0	5,700	1,400	21%
September	3,600	9	0	1,700	38	1%
October	590	0	0	0	0	0%
ANNUAL	**46,400**	**0**	**4**	**20,400**	**10,900**	**24%**

Table 6.25 summarizes average monthly and annual simulated SPWCP deliveries to the New Cache Canal for Alternative 4 with future conditions. The average deliveries are also shown as a percentage of the New Cache Canal headgate diversions in the CTP Run 2 future conditions hydrology simulation.

Table 6.25. SPWCP Deliveries to New Cache, Alternative 4 with Future Conditions (NISP Run 4b2), IY 1950-2005

Month	New Cache average diversions under future conditions (CTP Run 2) [AF]	Number of Years with Deliveries (out of 56)	Minimum [AF]	Maximum [AF]	Average [AF]	Average Delivery as a percentage of New Cache diversions under future conditions [%]
November	370	0	0	0	0	0%
December	68	0	0	0	0	0%
January	23	0	0	0	0	0%
February	4	0	0	0	0	0%
March	100	0	0	0	0	0%
April	1,200	0	0	0	0	0%
May	8,700	49	0	6,100	3,600	41%
June	12,800	52	0	6,000	4,200	33%
July	12,400	46	0	6,100	3,000	24%
August	6,300	33	0	6,100	1,500	24%
September	3,700	11	0	290	21	1%
October	600	0	0	0	0	0%
ANNUAL	**46,300**	**0**	**78**	**20,600**	**12,300**	**27%**

6.2.3 SPWCP Deliveries in Lieu of Releases from Terry Lake, Big Windsor, and Timnath Reservoir

The typical reservoir operations for Terry Lake, Big Windsor, and Timnath Reservoir are to store water during the winter and spring for release to the Larimer Weld or New Cache irrigation system later in the irrigation season when streamflows are reduced and direct flow irrigation water rights are no longer in priority.

As currently proposed, NISP would deliver water from Galeton Reservoir or the South Platte pumping station to Larimer Weld or New Cache in lieu of releases from Terry Lake, Big Windsor, and/or Timnath Reservoir. Accounting of these releases and deliveries to the irrigation systems would be maintained, and the next time the reservoir storage water rights are in priority during the following winter or spring, NISP would be able to take equal amounts of water at the PVC for storage in Glade Reservoir or Cactus Hill Reservoir under the priorities of the storage rights for Terry Lake, Big Windsor, and/or Timnath Reservoir.

6.2.3.1 Alternative 2

Tables 6.26 through 6.28 provide estimates of SPWCP deliveries to Larimer Weld or New Cache in lieu of releases from Terry Lake, Big Windsor Reservoir, and Timnath Reservoir under Alternative 2.

Table 6.26. Estimated SPWCP Deliveries for Exchange with Terry Lake, Alternative 2, IY 1950-2005

Month	Alternative 2 with Current Conditions Hydrology (NISP Run 3a)				Alternative 2 with Future Conditions Hydrology (NISP Run 4a)			
	Number of Years with Deliveries (out of 56)	Min [AF]	Max [AF]	Avg [AF]	Number of Years with Deliveries (out of 56)	Min [AF]	Max [AF]	Avg [AF]
November	0	0	0	0	0	0	0	0
December	0	0	0	0	0	0	0	0
January	0	0	0	0	0	0	0	0
February	0	0	0	0	0	0	0	0
March	0	0	0	0	0	0	0	0
April	2	0	1,200	29	1	0	1,200	22
May	0	0	0	0	1	0	1,200	21
June	1	0	950	17	1	0	2,100	37
July	16	0	6,100	760	30	0	6,100	1,600
August	34	0	6,100	2,700	36	0	6,100	2,000
September	1	0	570	10	0	0	0	0
October	0	0	0	0	0	0	0	0
ANNUAL	—	**0**	**6,200**	**3,500**	—	**0**	**6,300**	**3,600**

Table 6.27. Estimated SPWCP Deliveries for Exchange with Big Windsor Reservoir, Alternative 2, IY 1950-2005

Month	Alternative 2 with Current Conditions Hydrology (NISP Run 3a)				Alternative 2 with Future Conditions Hydrology (NISP Run 4a)			
	Number of Years with Deliveries (out of 56)	Min [AF]	Max [AF]	Avg [AF]	Number of Years with Deliveries (out of 56)	Min [AF]	Max [AF]	Avg [AF]
November	0	0	0	0	0	0	0	0
December	0	0	0	0	0	0	0	0
January	0	0	0	0	0	0	0	0
February	0	0	0	0	0	0	0	0
March	0	0	0	0	0	0	0	0
April	0	0	0	0	0	0	0	0
May	0	0	0	0	0	0	0	0
June	0	0	0	0	0	0	0	0
July	26	0	4,800	930	19	0	4,800	970
August	24	0	1,200	510	27	0	1,200	530
September	0	0	0	0	0	0	0	0
October	0	0	0	0	0	0	0	0
ANNUAL	—	**0**	**6,000**	**1,400**	—	**0**	**6,000**	**1,500**

Table 6.28. Estimated SPWCP Deliveries for Exchange with Timnath Reservoir, Alternative 2, IY 1950-2005

Month	Alternative 2 with Current Conditions Hydrology (NISP Run 3a)				Alternative 2 with Future Conditions Hydrology (NISP Run 4a)			
	Number of Years with Deliveries (out of 56)	Min [AF]	Max [AF]	Avg [AF]	Number of Years with Deliveries (out of 56)	Min [AF]	Max [AF]	Avg [AF]
November	0	0	0	0	0	0	0	0
December	0	0	0	0	0	0	0	0
January	0	0	0	0	0	0	0	0
February	0	0	0	0	0	0	0	0
March	0	0	0	0	0	0	0	0
April	0	0	0	0	0	0	0	0
May	1	0	850	15	1	0	51	1
June	1	0	340	6	2	0	350	7
July	3	0	1,300	62	3	0	1,700	55
August	18	0	2,400	400	15	0	2,200	330
September	1	0	440	8	0	0	0	0
October	0	0	0	0	0	0	0	0
ANNUAL	**—**	**0**	**2,400**	**490**	**—**	**0**	**2,200**	**390**

6.2.3.2 Alternative 3

Tables 6.29 through 6.31 provide estimates of SPWCP deliveries to Larimer Weld or New Cache in lieu of releases from Terry Lake, Big Windsor Reservoir, and Timnath Reservoir under Alternative 3.

Table 6.29. Estimated SPWCP Deliveries for Exchange with Terry Lake, Alternative 3, IY 1950-2005

Month	Alternative 3 with Current Conditions Hydrology (NISP Run 3b1)				Alternative 3 with Future Conditions Hydrology (NISP Run 4b1)			
	Number of Years with Deliveries (out of 56)	Min [AF]	Max [AF]	Avg [AF]	Number of Years with Deliveries (out of 56)	Min [AF]	Max [AF]	Avg [AF]
November	0	0	0	0	0	0	0	0
December	0	0	0	0	0	0	0	0
January	0	0	0	0	0	0	0	0
February	0	0	0	0	0	0	0	0
March	0	0	0	0	0	0	0	0
April	2	0	1,200	29	1	0	1,300	22
May	0	0	0	0	1	0	1,200	21
June	1	0	960	17	1	0	2,400	42
July	15	0	6,100	720	30	0	6,100	1,400
August	36	0	6,100	2,900	37	0	6,100	1,900
September	0	0	0	0	0	0	0	0
October	0	0	0	0	0	0	0	0
ANNUAL	**—**	**0**	**6,200**	**3,700**	**—**	**0**	**6,300**	**3,400**

Table 6.30. Estimated SPWCP Deliveries for Exchange with Big Windsor Reservoir, Alternative 3, IY 1950-2005

Month	Alternative 3 with Current Conditions Hydrology (NISP Run 3b1)				Alternative 3 with Future Conditions Hydrology (NISP Run 4b1)			
	Number of Years with Deliveries (out of 56)	Min [AF]	Max [AF]	Avg [AF]	Number of Years with Deliveries (out of 56)	Min [AF]	Max [AF]	Avg [AF]
November	0	0	0	0	0	0	0	0
December	0	0	0	0	0	0	0	0
January	0	0	0	0	0	0	0	0
February	0	0	0	0	0	0	0	0
March	0	0	0	0	0	0	0	0
April	0	0	0	0	0	0	0	0
May	0	0	0	0	0	0	0	0
June	0	0	0	0	0	0	0	0
July	27	0	4,800	1,100	15	0	4,700	720
August	28	0	1,200	540	30	0	1,200	550
September	0	0	0	0	0	0	0	0
October	0	0	0	0	0	0	0	0
ANNUAL	**—**	**0**	**6,000**	**1,600**	**—**	**0**	**5,300**	**1,300**

Table 6.31. Estimated SPWCP Deliveries for Exchange with Timnath Reservoir, Alternative 3, IY 1950-2005

Month	Alternative 3 with Current Conditions Hydrology (NISP Run 3b1)				Alternative 3 with Future Conditions Hydrology (NISP Run 4b1)			
	Number of Years with Deliveries (out of 56)	Min [AF]	Max [AF]	Avg [AF]	Number of Years with Deliveries (out of 56)	Min [AF]	Max [AF]	Avg [AF]
November	0	0	0	0	0	0	0	0
December	0	0	0	0	0	0	0	0
January	0	0	0	0	0	0	0	0
February	0	0	0	0	0	0	0	0
March	0	0	0	0	0	0	0	0
April	0	0	0	0	0	0	0	0
May	1	0	1,000	19	1	0	260	5
June	1	0	290	5	2	0	620	12
July	4	0	1,300	67	1	0	1,300	23
August	15	0	2,200	380	15	0	2,400	370
September	1	0	440	8	0	0	0	0
October	0	0	0	0	0	0	0	0
ANNUAL	**—**	**0**	**2,300**	**480**	**—**	**0**	**2,400**	**410**

6.2.3.3 Alternative 4

Tables 6.32 through 6.34 provide estimates of SPWCP deliveries to Larimer Weld or New Cache in lieu of releases from Terry Lake, Big Windsor Reservoir, and Timnath Reservoir under Alternative 4.

Table 6.32. Estimated SPWCP Deliveries for Exchange with Terry Lake, Alternative 4, IY 1950-2005

Month	Alternative 4 with Current Conditions Hydrology (NISP Run 3b2)				Alternative 4 with Future Conditions Hydrology (NISP Run 4b2)			
	Number of Years with Deliveries (out of 56)	Min [AF]	Max [AF]	Avg [AF]	Number of Years with Deliveries (out of 56)	Min [AF]	Max [AF]	Avg [AF]
November	0	0	0	0	0	0	0	0
December	0	0	0	0	0	0	0	0
January	0	0	0	0	0	0	0	0
February	0	0	0	0	0	0	0	0
March	0	0	0	0	0	0	0	0
April	2	0	1,200	29	1	0	1,200	22
May	1	0	2,300	41	1	0	1,200	21
June	1	0	2,300	41	1	0	3,700	66
July	18	0	6,100	910	37	0	6,100	1,800
August	41	0	6,100	3,400	42	0	6,100	2,500
September	1	0	700	12	0	0	0	0
October	0	0	0	0	0	0	0	0
ANNUAL	—	**0**	**6,200**	**4,500**	—	**0**	**6,300**	**4,400**

Table 6.33. Estimated SPWCP Deliveries for Exchange with Big Windsor Reservoir, Alternative 4, IY 1950-2005

Month	Alternative 4 with Current Conditions Hydrology (NISP Run 3b2)				Alternative 4 with Future Conditions Hydrology (NISP Run 4b2)			
	Number of Years with Deliveries (out of 56)	Min [AF]	Max [AF]	Avg [AF]	Number of Years with Deliveries (out of 56)	Min [AF]	Max [AF]	Avg [AF]
November	0	0	0	0	0	0	0	0
December	0	0	0	0	0	0	0	0
January	0	0	0	0	0	0	0	0
February	0	0	0	0	0	0	0	0
March	0	0	0	0	0	0	0	0
April	0	0	0	0	0	0	0	0
May	0	0	0	0	0	0	0	0
June	0	0	0	0	0	0	0	0
July	31	0	4,800	1,300	22	0	4,800	920
August	37	0	1,200	730	35	0	1,200	700
September	0	0	0	0	0	0	0	0
October	0	0	0	0	0	0	0	0
ANNUAL	—	**0**	**6,000**	**2,000**	—	**0**	**6,000**	**1,600**

Table 6.34. Estimated SPWCP Deliveries for Exchange with Timnath Reservoir, Alternative 4, IY 1950-2005

Month	Alternative 4 with Current Conditions Hydrology (NISP Run 3b2)				Alternative 4 with Future Conditions Hydrology (NISP Run 4b2)			
	Number of Years with Deliveries (out of 56)	Min [AF]	Max [AF]	Avg [AF]	Number of Years with Deliveries (out of 56)	Min [AF]	Max [AF]	Avg [AF]
November	0	0	0	0	0	0	0	0
December	0	0	0	0	0	0	0	0
January	0	0	0	0	0	0	0	0
February	0	0	0	0	0	0	0	0
March	0	0	0	0	0	0	0	0
April	1	0	210	4	0	0	0	0
May	1	0	1,300	24	1	0	78	1
June	2	0	350	7	1	0	28	1
July	4	0	1,700	70	5	0	1,200	72
August	19	0	2,400	460	20	0	2,400	470
September	1	0	420	8	1	0	380	7
October	0	0	0	0	0	0	0	0
ANNUAL	**—**	**0**	**2,400**	**570**	**—**	**0**	**2,400**	**550**

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Section 7
Operational Flexibility

There are aspects of proposed NISP operations for which the District seeks to have flexibility to adapt to changing conditions once the project is operational. These include alternate water supply sources under first fill and drought conditions and out of priority diversions from the South Platte River. These issues are discussed in detail in the following sections.

7.1 Alternate Water Supply Sources

NISP relies on two water rights to achieve the target 40,000 AFY yield—the 1980 Grey Mountain decree off of the Poudre River and the 1992 SPWCP decrees for diversion from the South Platte River and exchanges up the Poudre River. NISP has been modeled for the 1950 through 2005 time period, and those water rights were found to be sufficient to produce the required yield. There are certain situations, however, when NISP may desire to divert water other than those associated with its water rights. The first is during the initial project start-up. The second is during periods of extreme drought. Alternate water supply sources for these specific events are described conceptually in the following sections; however, they are not accounted for in modeling analyses completed for the NISP SDEIS.

7.1.1 Reservoir First Fill

When NISP is completed, with either Glade or Cactus Hill Dam, it would be subject to a first-fill plan administered by the Dam Safety Branch of the Colorado DWR. Typically, a new dam is restricted to a rate of fill of 1 foot per day for the first fill in order to monitor the performance of the new facility; this rate of fill was confirmed with the Chief of Dam Safety for the Colorado DWR. It was also determined that the first 50 feet could be filled at a more rapid rate (Brouwer 2011b). However, the first 50 feet of elevation in Glade Reservoir would only amount to about 2,800 AF of storage. The first 50 feet of fill would be about 8,300 AF in Cactus Hill Reservoir.

If the SPWCP is built first or concurrently with Glade Reservoir (or Cactus Hill Reservoir), it is unlikely that first fill limitations would impact the filling of Glade Reservoir or Cactus Hill Reservoir since the maximum Galeton exchange is about 200 cfs and the exchange window is typically available for several months in a row during the irrigation season. However, in the event that Glade Reservoir or Cactus Hill Reservoir is built first, starting from zero storage could severely limit the amount of water that could be put in storage in a given year. Until the SPWCP is online, Glade Reservoir or Cactus Hill Reservoir would be wholly dependent on the Grey Mountain water right.

Table 7.1 summarizes the frequency of yield from the Grey Mountain right based on model results for the three NISP action alternatives with 2010 current conditions hydrology and 2050 future conditions hydrology over the IY 1950-2005 study period.

Table 7.1. Frequency of Modeled Yield from Grey Mountain Right, IY 1950-2005

Scenario	Frequency of Yield	Percentage of Years with Yield	Largest gap between years with yield
Alternative 2			
NISP Run 3a	37 of 56 years	66%	5 years
NISP Run 4a	30 of 56 years	54%	8 years
Alternative 3			
NISP Run 3b1	36 of 56 years[1]	64%	6 years
NISP Run 4b1	29 of 56 years	52%	8 years
Alternative 4			
NISP Run 3b2	37 of 56 years[2]	66%	5 years
NISP Run 4b2	29 of 56 years[3]	52%	8 years

[1] One year with yield of 15 AF considered negligible.
[2] Fourteen years with yield of 35 AF or less considered negligible.
[3] Twenty-three years with yield of 32 AF or less considered negligible.

The data in Table 7.1 show that, depending on the NISP alternative scenario, the Grey Mountain right produces yield in 29 to 37 out of 56 years in the study period, with periods of no yield ranging from 5 to 8 years. If the start-up of Glade Reservoir or Cactus Hill Reservoir occurs during a wet year, the project would have water available to deliver to the NISP Participants. However, based on the model results, it is still possible that there could be little or no available flow upon start-up. The Participants could choose to wait until there is a year when water is available, or find other sources of water to put into the project.

In order to bring Glade Reservoir to the point that it could capture water and not be significantly hindered by the 1-foot per day fill criterion, the DEIS described the potential of putting up to 100,000 AF in Glade Reservoir from transmountain sources, including water from the C-BT Project, the Windy Gap Project, the Grand River Ditch, and Laramie-Poudre Tunnel. Based upon comments raised on the DEIS and a re-evaluation of the duration of the first fill, a lesser amount of storage based on the NISP Participants' C-BT allocation is now proposed. According to Harvey Economics (2011), the NISP Participants cumulatively owned nearly 60,000 units of C-BT water as of the end of 2010. If water supply is physically and legally limited at the time of first fill, it is proposed that a combination of the Participants' C-BT water (about 20 percent of annual yield) and yield from the District's Poudre River decree (Grey Mountain right) could fill the primary NISP reservoir to 40,000 AF after 2 years of operation. Based on analysis of this scenario by Brouwer (2011b; see Appendix H), the allottee-delivered C-BT water would be limited to 20,000 AF under the first fill of Glade Reservoir or Cactus Hill Reservoir.

7.1.2 Alternate Water Supply Sources During Drought

The NISP alternative configurations were sized based upon simulated hydrology for the period IY 1950-2005. This 56-year period has a number of droughts including the mid-1950s drought. The project is not sized, however, to meet full firm yield requirements during more severe droughts such as the recent drought of the early- through mid-2000s. The Grey Mountain water rights on the Poudre River would have very rarely been in priority during the early- to mid-2000s. Moreover, the historically more frequent SPWCP water rights on the South Platte River would have been in priority much less than typical during the recent drought period (IY 2000-2005) and would therefore have yielded much less water during the drought compared to the long-term average (IY 1950-2005). This is demonstrated by the model results for Alternative 2 shown in **Table 7.2** below.

Table 7.2. Simulated Annual NISP Diversions from the Poudre and South Platte Rivers, Alternative 2, IY 2000-2005

Year	Alternative 2 with Current Conditions (Run 3a)		Alternative 2 with Future Conditions (Run 4a)	
	GreyMtnDecree[1] [AF]	GaltonDivLimit[2] [AF]	GreyMtnDecree[1] [AF]	GaletonDivLimit[2] [AF]
2000	2,400	4,900	0	12,500
2001	0	46,200	0	35,300
2002	0	2,800	0	6,700
2003	5,900	4,900	0	14,400
2004	0	6,200	0	20,900
2005	3,300	15,900	0	17,100
Average, IY 2000-2005	**1,900**	**13,500**	**0**	**17,800**
Average, IY 1950-2005	**19,000**	**27,500**	**17,800**	**28,900**

[1] MODSIM link GreyMtnDecree represents NISP diversions from the Poudre River under the Grey Mountain water rights with priority date May 2, 1980

[2] MODSIM link GaletonDivLimit represents NISP diversions from the South Platte River under the SPWCP water rights with priority date December 11, 1992

The Grey Mountain water rights would be diverted from the Poudre River at the PVC headgate, just upstream of the streamflow gage at the mouth of Poudre Canyon. The SPWCP water rights would be diverted at a proposed new diversion structure downstream of the confluence of the Poudre and South Platte Rivers. Given the relative differences in the magnitudes of flow at the two proposed diversion locations—flows on the mainstem South Platte River are usually higher than on the tributary Poudre River—the model results suggest that the impact of drought would be greater on a junior Poudre River water right than on the more junior South Platte water right.

In such drought events it is expected that NISP Participants would still require water supplies, even while curtailing their demands through aggressive drought-response measures. Additionally, because of the conservative nature of municipal water supply planning, it is unlikely that Participants would be willing to fully draw down their supply in Glade Reservoir or Cactus Hill Reservoir on the hope that supplies would be available the following year. This type of response to drought would be similar to actual operations of other major municipal water supply systems along the Front Range during the early 2000s drought.

Table 20 in the *Colorado Drought Mitigation and Response Plan* (Colorado Water Conservation Board [CWCB] 2013) summarizes local-scale drought management tools, which include the following options as short-term responses in the category of water rights management:

- Dry-year leasing of water rights
- Water banks established for the sale, transfer, and exchange of water
- Interruptible water supply agreements (IWSAs)

Dry-year leasing and water banking were previously evaluated as water supply concepts for NISP (HDR 2007, Appendix R and Appendix S), but the concepts were both eliminated because they did not meet the firm yield screening criterion defined for the EIS alternatives evaluation. However, in severe droughts such as that of the early 2000s, it is anticipated that the NISP Participants—either as a group or individually—may pursue water supplies through any available options declared legal by the state. As an example, this could include an IWSA approved by the State Engineer and implemented on a temporary basis. Water sources could include Larimer Weld and New Cache, subject to the same constraints as the proposed SPWCP exchanges; if Galeton Reservoir was empty and could not execute

the exchanges, the NISP Participants could pursue buying out the Larimer Weld and New Cache water for a year. This type of temporary alternate source of water supply is not captured in the modeling for the NISP SDEIS but would be operated in compliance with all state regulations in order to prevent injury to other water users.

7.2 Out-of-Priority Storage at Galeton Reservoir

Out-of-priority storage is when a junior diverter, such as the SPWCP, diverts a senior downstream reservoir's water right during the winter to spring fill season. This practice is allowed by the SEO. Results of hydrologic modeling of the NISP alternatives for NEPA analyses indicate that NISP diversions from the South Platte River could occur in all months if and when the SPWCP water rights are in priority. For example, model results of South Platte diversions for Alternative 2 on a volume basis are relatively consistent for both current (NISP Run 3a) and future (NISP Run 4a) conditions, as summarized in **Table 7.3** below. For both scenarios, 1978 is the only year with zero diversions during the November-March winter months. Note that because the modeling tools used for the NISP SDEIS allocate water according to the priority system, the winter diversions shown in Table 7.3 are actually in-priority winter diversions.

Table 7.3. Summary of Modeled Average Annual and Winter NISP Diversions from the South Platte River, Alternative 2, IY 1950-2005

Model Run	Total Number of Months with South Platte Diversions (out of 672)	Average Annual South Platte Diversion [AFY]	Total Number of Winter Months with South Platte Diversions (out of 280)	Average Annual South Platte Winter Diversions [AFY]	Percentage of Average Annual Diversions that Occur in Winter [%]
Run 3a	441	28,400	167	10,700	37.77%
Run 4a	431	29,800	159	11,100	37.16%

In years when the runoff is sufficient for senior diverters to fill later in the season, the out-of-priority fill of Galeton Reservoir would be achievable and downstream senior diverters would not be harmed. In years in which runoff is insufficient for senior diverters to fill, the out-of-priority storage would be required to be released back to the South Platte River. This would be accomplished by running the pipeline from the SPWCP South Platte River diversion to Galeton Reservoir backwards in order to deliver water from storage to the river. The frequency of the potential out-of-priority storage is not known because the hydrologic modeling shows it would not be necessary. Although this out-of-priority operation is not captured in the hydrologic modeling of the NISP action alternatives, the likely effect would be to increase the relative proportion of NISP diversions from the South Platte River during the winter. It is described as a possible operational flexibility scenario in case the call regime on the South Platte River changes in the future. The total diversions over the course of a year would not be affected because the need for South Platte water is limited by storage capacity in Galeton Reservoir and demand for delivery of exchange water to the Larimer Weld and New Cache systems.

Section 8

Proposed Operations to Benefit Streamflows

NISP proposes operations to benefit Poudre River streamflows through a flow augmentation program in certain months and curtailment of project diversions to maintain minimum flows for fish hatchery and recreational purposes. These operations are described below.

8.1 Glade Reservoir Releases for Streamflow Augmentation

The District proposes to include a flow augmentation program to improve Poudre River streamflows under Alternative 2 only (both the Reclamation Contract Option and the Reclamation No Contract Option). As discussed previously in this report, Alternatives 3 and 4 do not include a Reclamation Contract Option, and therefore are not proposed to include the infrastructure necessary for the flow augmentation releases. Specifications for this proposed program were developed by the District and the third-party consultant team, in coordination with the Corps, and modeled as follows:

- Volume of water available: A pool of 3,600 AF would be designated in Glade Reservoir at the start of each irrigation year. Any unused volume of water would not be carried over to subsequent years and would revert to NISP supply available for delivery to the project Participants.
- Dates of flow releases: November 1 through April 30 and September 1 through September 30. Real-time monitoring of the augmentation pool and streamflows may allow releases on additional days outside of this designated period.
- Rate and location of flow release: Water would be released from Glade Reservoir as necessary to maintain a flow of 10 cfs at the target location. As shown in Figure 3.12 in Section 3.2.1.2, a low-flow outlet to the Poudre River via a pipeline is proposed to be located across the river from Greeley's Bellvue pipeline intake.
- Target location: The downstream side of the Larimer Weld Canal headgate. This location was selected for monitoring the target flow because (a) it is administered as a dry-up point during the winter and (b) it is upstream of the Martinez Park reach of the Poudre River, which is a critical site for several other resource analyses (e.g., aquatic habitat, water quality, and geomorphology).
- Proposed delivery point for augmentation flows: For NEPA analyses, it was assumed that flows would be released from a pipeline to the river upstream of the Larimer County Canal headgate.
- Proposed end point for augmentation reach: For the NEPA analyses, it was assumed that the flows would be diverted at the Timnath Reservoir (a.k.a. Cache la Poudre Reservoir) inlet canal headgate, about 12 miles downstream. It is assumed that the State Engineer would assess a 1/4th percent per mile loss on the flow augmentation releases.

Curtailment of streamflow augmentation releases may be required under extreme drought conditions when reservoir levels are low. Hydrologic modeling performed for the SDEIS shows that this would have occurred once during the 56-year hydrologic study period, in the year 2005. Any curtailment would be planned and coordinated with CPW well in advance of the curtailment to maximize benefits of the water available for release. Further details regarding curtailment of streamflow augmentation releases during extreme drought conditions will be discussed with CPW during the state's Fish and Wildlife Mitigation Plan development process.

The exact method to return the water to Glade Reservoir will be determined between the SDEIS and the FEIS, but possible options include water exchanges. The release and recapture of the augmentation flows is allowed by the District's decrees proposed to be used for NISP. The District's Poudre Project Decree (Case No. 11CW242; diligence granted in 2013) provides for storage and specific beneficial uses. Use of the water for NISP is specifically recognized in paragraph 7 of the Poudre Project Decree. The Poudre Project Decree provides for storage of 5,400 AF of water in Glade Forebay Reservoir and 220,000 AF of water in Glade Reservoir with the combined total storage not to exceed 220,000 AF (Poudre Project Decree, paragraphs 7.1.5 and 7.2.5). Beneficial uses for the water include irrigation, municipal, domestic, replacement, recreation, industrial, and production of electrical power and energy (Poudre Project Decree, paragraph 7.1.7). Exchanges upstream to numerous points are decreed in paragraph 8A of the South Platte Decree (Case No. 11CW241; diligence granted in 2013).

Water that is stored in Glade Reservoir would become the personal property of the District. The District proposes to integrate this specific flow augmentation program into normal NISP operations under Alternative 2 by exercising its statutory right to release stored water for delivery downstream for a decreed beneficial use. The District would inform the state and division engineers that the water released from storage is to be shepherded downstream to a specified diversion point without being diverted by others, as provided and required by C.R.S. §37-87-103 *Notice of Released Stored Waters.*

Figure 8.1 illustrates the proposed geographic extent of the flow augmentation program for Alternative 2.

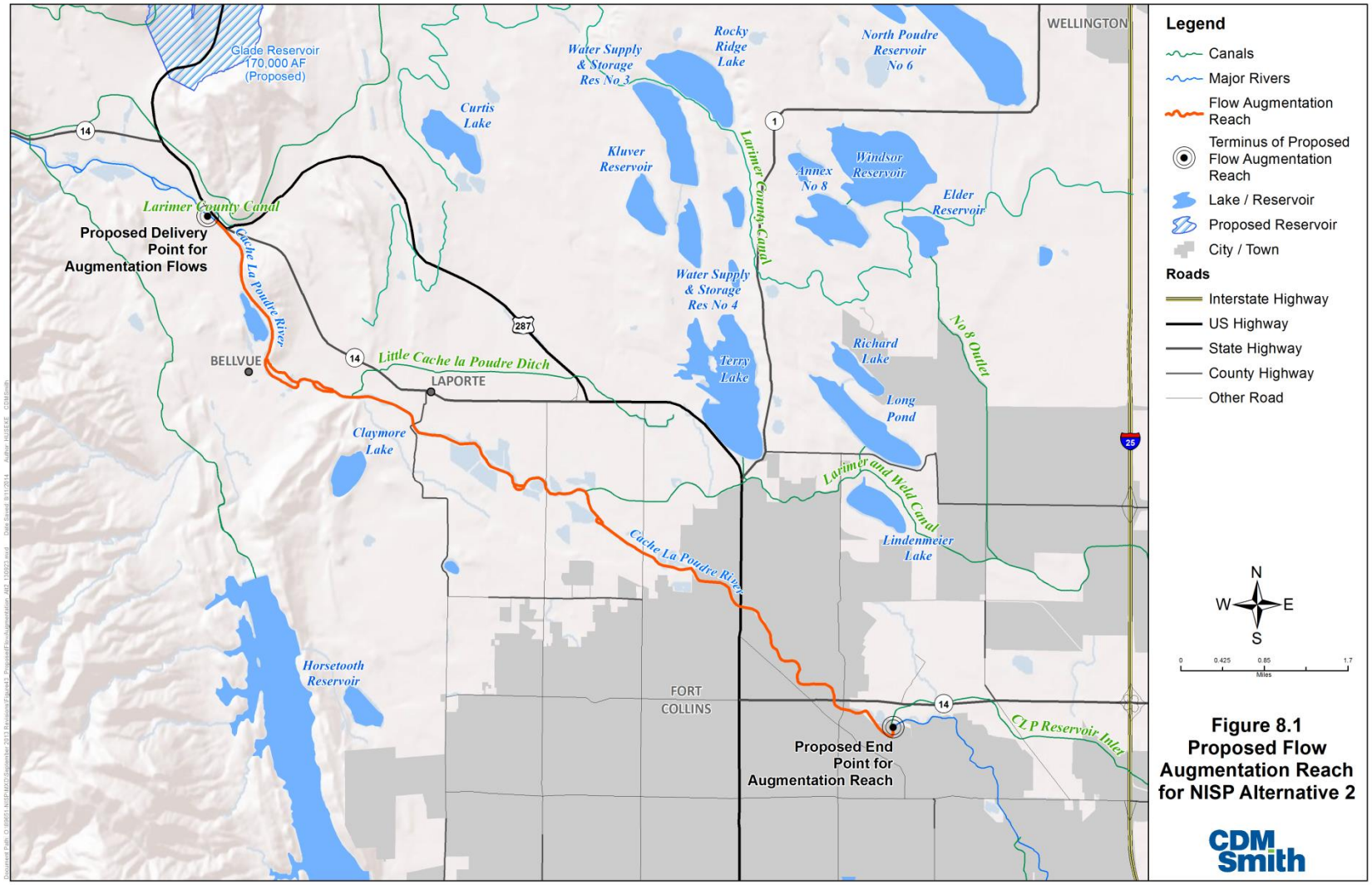

Figure 8.1
Proposed Flow Augmentation Reach for NISP Alternative 2

The proposed flow releases were incorporated into the hydrologic modeling by post-processing of the IY 1980-2005 daily streamflow estimates in the designated months and in the designated reach for Alternative 2. For each day in the designated months, the augmentation flow needed to reach 10 cfs below Larimer Weld was calculated. This adjustment was then applied to other locations within the affected reach between the proposed release point (upstream of Larimer County Canal headgate) and end point (Timnath Reservoir inlet). The estimated improvements to low flows through Fort Collins are demonstrated by the daily flow results at the below Larimer Weld location presented in **Table 8.1**.

Table 8.1. Estimated Reduction in Days with Low Streamflows below Larimer Weld as a Result of Proposed Flow Augmentation Program, Alternative 2, IY 1980-2005

Scenario	Before Flow Augmentation		After Flow Augmentation		Percent Change
	Number of days[1] with flow < 10 cfs	Percent of days with flow < 10 cfs	Number of days[1] with flow < 10 cfs	Percent of days with flow < 10 cfs	
Alternative 2 with Current Conditions Hydrology					
NISP Run 3a	4,213	44%	620	7%	85%
Alternative 2 with Future Conditions Hydrology					
NISP Run 4a	4,274	45%	591	6%	86%

[1]Out of 9,497 total daily flow estimates in the IY 1980-2005 study period

Figures 8.2 and 8.3 are flow-duration curves (exceedance plots) based on daily streamflow estimates below Larimer Weld for Alternative 2 with 2010 current conditions hydrology (NISP Run 3a) and Alternative 2 with 2050 future conditions hydrology (NISP Run 4a), respectively. The y-axis scale is adjusted to emphasize the improvements to low flows (< 10 cfs) with the proposed flow augmentation program. Figure 8.2 illustrates that, under current conditions hydrology and without flow augmentation, only about 55 percent of estimated daily flows immediately below the Larimer Weld headgate would exceed 10 cfs. With the proposed flow augmentation program in place, flows would improve to greater than 10 cfs about 93 percent of the time, based on the estimated daily flows over IY 1980-2005. Figure 8.3 shows similar results under future conditions hydrology.

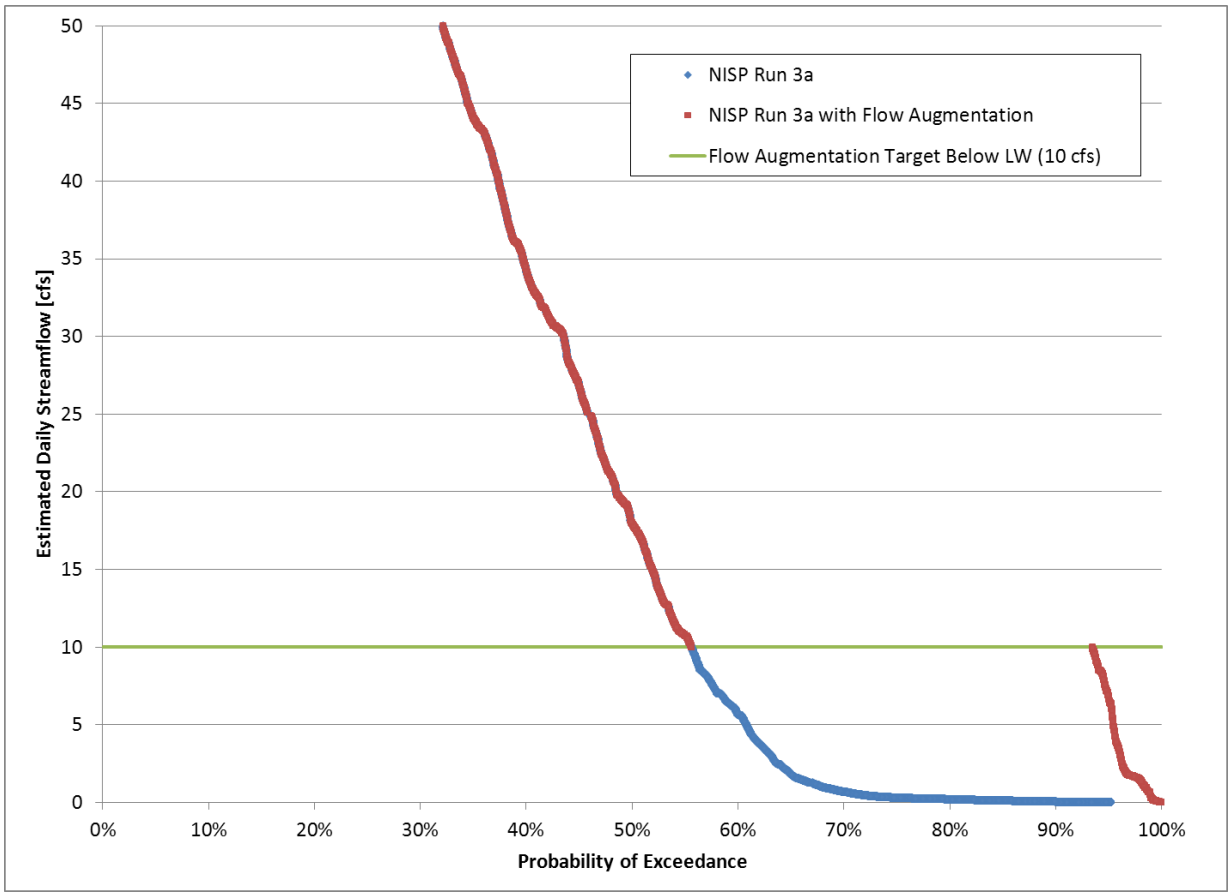

Figure 8.2 **Partial Flow-Duration Curve, Below Larimer Weld, Alternative 2 with 2010 Current Conditions Hydrology (NISP Run 3a), IY 1980-2005**

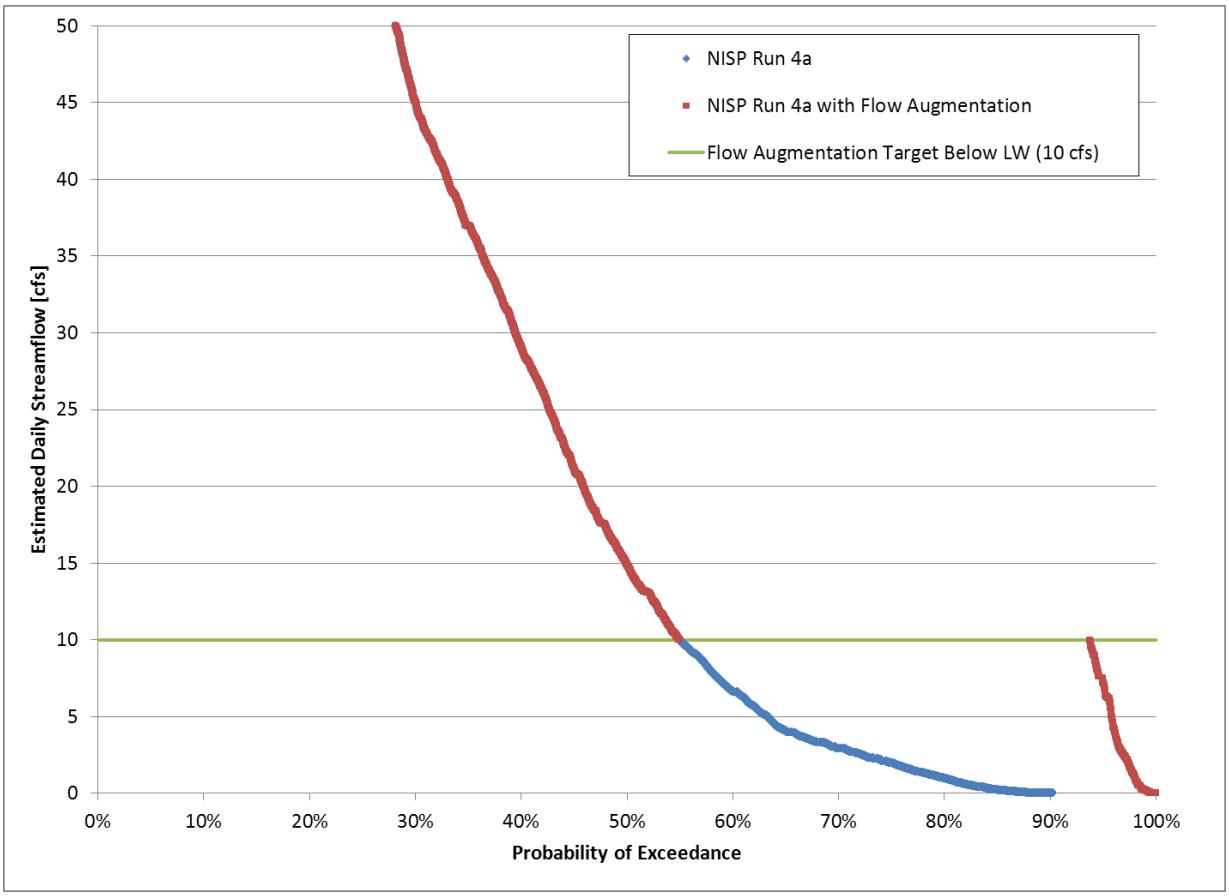

Figure 8.3 Partial Flow-Duration Curve, Below Larimer Weld, Alternative 2 with 2050 Future Conditions Hydrology (NISP Run 4a), IY 1980-2005

8.2 Curtailment of In-Priority NISP Diversions to Meet Minimum Flow Targets

There are three water rights decreed for fish hatchery and recreational purposes below the Canyon Mouth that are junior to most water rights in the basin—including the District's Grey Mountain storage rights (priority date May 2, 1980) proposed to be used for NISP—but are senior to several of the exchanges proposed for NISP. Although fish hatchery and recreational water rights are junior to the Grey Mountain right, the District has agreed to curtail in-priority NISP diversions under the Grey Mountain storage right to the extent curtailment of the NISP diversions would meet the minimum flow criteria at these downstream points.

The fish hatchery and recreational water rights are decreed for the Watson Lake Fish Hatchery, the Fort Collins boat chute, and the Fort Collins Nature Center (see **Figure 8.4**). The recreational minimum flows are not part of the CWCB's Instream Flow Program, but were decreed for instream beneficial use prior to the 2001 legislation (Senate Bill 01-216) authorizing Recreational In-Channel Diversions. At the Watson Lake fish hatchery, water is diverted from the river and routed through the hatchery and returned to the river upstream of other users. The reach between the Watson Lake diversion weir and outlet may be occasionally dried up by the diversion.

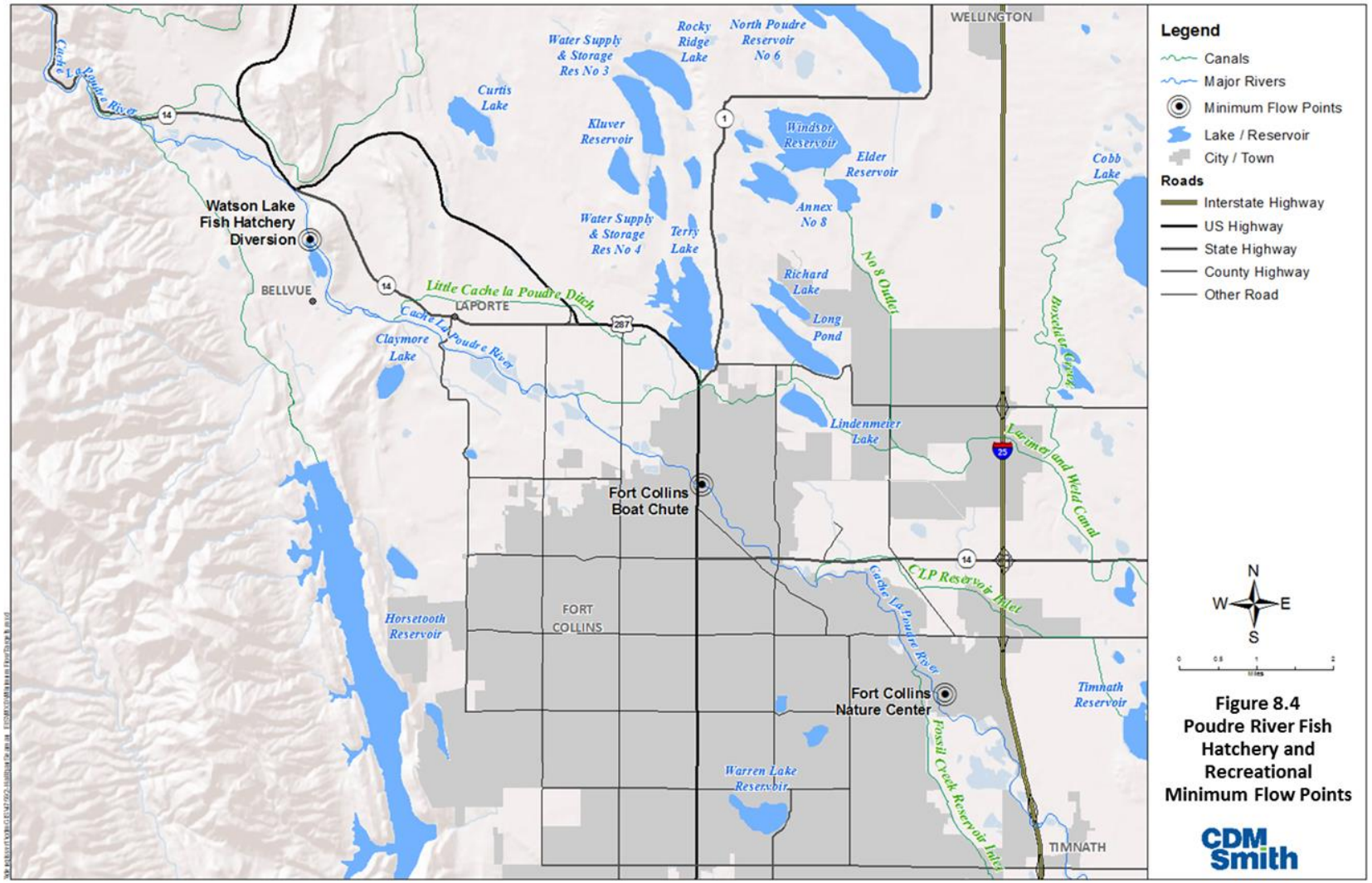

Figure 8.4
Poudre River Fish Hatchery and Recreational Minimum Flow Points

During the ongoing NEPA process, the associated water rights decrees and the District's stipulations were made available from the Colorado DWR and the District, facilitating a better understanding of the fish hatchery and recreational flow rates that should be simulated in modeling for the NISP SDEIS. The Grey Mountain water rights were originally decreed in Case No. 80CW355. With regard to the Watson Lake Fish Hatchery, paragraph 5 of the decree states the following:

> The Water Rights shall be subordinated in priority to a water right for the Bellview-Watson Trout Rearing Station up to a maximum of 50 cfs, for purposes that are nonconsumptive except for evaporation, for the period between April 15 and October 14, inclusive, and up to a maximum of 25 cfs, for purposes that are nonconsumptive except for evaporation, for the period between October 15 and April 14, so long as the State of Colorado obtains a decree therefor in due course.

A water right for the specified dates and flow rates at the Watson Lake Diversion Weir was decreed in Case No. 85CW201.

Flow requirements from the various decrees are summarized as follows:

- Watson Lake Fish Hatchery (Case No. 85CW201; Admin No. 49308.41098)
  - 50 cfs summer (April 15-October 14)
  - 25 cfs winter (October 15-April 14)
- Fort Collins boat chute (Case Nos. 86CW371 and 2000CW236; Admin No. 50038.00000)
  - 30 cfs (May 1-August 31)
  - 5 cfs (September 1-April 30)
- Fort Collins Nature Center (Case Nos. 86CW371 and 2000CW236; Admin No. 49722.00000)
  - 30 cfs (May 1-August 31)
  - 5 cfs, with all river flows between 5 cfs and 25 cfs to be shared equally between Fort Collins and the City of Thornton, and Fort Collins is entitled to no more than 15 cfs (September 1-April 30)

Although the Nature Center recreational water right was not made absolute until Case No. 2000CW236, at the flow rates specified above, the District and the City of Fort Collins have an Amended Stipulation (Consolidated Case Nos. 85CW206, 85CW207, 85CW208, 85CW209, 85CW210, and 89CW122) that is dated June 1992 and assumed by both entities to supersede the language in the decrees governing operations as it affects the water rights of the District and Fort Collins. Specifically, the Amended Stipulation calls for flow rates of 50 cfs (April 15-October 14) and 25 cfs (October 15-April 14) at the Nature Center diversion dam.

In addition, Fort Collins has stated an intent to purchase the 1/8th interest in the Grey Mountain water right that is owned by the CLPWUA (Koch and Hoelscher 2006). A stipulation between the District and Fort Collins in Case No. 2003CW405 states the following:

> Any transfer of the 1/8th interest in the Grey Mountain Right from the [CLPWUA] to Fort Collins will be subject to the bypass obligation to the Bellvue-Watson Trout Rearing Station stated in paragraph 5 of the original Grey Mountain decree, Case No. 80CW355, and the bypass obligation to the Fort Collins Nature Center Diversion Dam as stated in the Amended Stipulation in Consolidated Case Nos. 85CW206, 85CW207, 85CW208, 85CW209, 85CW210, and 89CW122. Such bypass obligations shall be allocated pro rata between Northern [Water]

and Fort Collins based on the relative percentage of the Grey Mountain Right being diverted or stored on a daily basis.

Thus, legal commitments for the Grey Mountain right to be curtailed to meet minimum flow requirements at Watson Lake and the Fort Collins Nature Center are well-defined and documented.

Although the District is subject to the flow criteria in the stipulations with Fort Collins, other water users with decrees more junior than the boat chute and nature center recreational flows decrees are only required to curtail diversions to meet the flow targets specified in the decree in Case No. 2000CW236. With regard to the administration of these water rights, a call has never been placed on the Poudre River to meet the flow requirements of the Nature Center recreational water right. According to Fort Collins, "Currently there are no known operating rights that are junior to the Power Plant Dam and Nature Center Dam rights on which to place a call. These rights will primarily be utilized in the future if other projects having junior rights are developed" (Hoelscher 2010).

In terms of NISP operations, as stated above, the District has agreed to stipulations that diversions of the 1980-priority Grey Mountain storage rights would be curtailed to meet the junior-priority minimum flow targets. The 1992-priority SPWCP exchanges would be limited by the minimum flow targets based on the administrative order of the river. However, if the water that is being diverted by NISP under an SPWCP exchange would never have reached the minimum flow location under existing operations, then NISP can divert when the minimum flow target is not met.

For example, Terry Lake is filled by the Little Cache Canal, and Big Windsor is filled from the Larimer and Weld Canal. Both canals have diversion headgates located upstream of the Boat Chute and Nature Center minimum flow points. If NISP is making a diversion under an SPWCP reservoir exchange with Terry Lake or Big Windsor, the Boat Chute and Nature Center minimum flow targets do not have to be met. Likewise, the Timnath Reservoir inlet canal headgate is downstream of the Boat Chute, but upstream of the Nature Center, so NISP could make an exchange on Timnath Reservoir water even if the Nature Center minimum flow target is not satisfied.

The District also plans to minimize NISP diversions during the winter months of November through March (see Tables 3.1, 3.4, 4.1, and 4.2, which include diversion counts that show the infrequency of winter diversions relative to other months). To help capture this proposed operation in the modeling for the NISP SDEIS, the scripting code used to execute the model was revised such that the Watson Lake minimum flow target is 50 cfs and the Boat Chute minimum flow target is 30 cfs for all months of the year. This has the effect of reducing winter Grey Mountain rights to a few isolated winter months during the 56-year study period, and the reservoir exchanges are limited, except in scenarios as described in the preceding paragraph. Additional information regarding the fish hatchery and recreational minimum flows is provided in Section 9.3 of the "Water Administration in the Cache la Poudre River Basin" technical memorandum (CDM Smith, DiNatale Water Consultants, and Hydros Consulting 2011) and Section 7.5.1 of the *CTP Hydrologic Modeling Report* (CDM Smith and DiNatale Water Consultants 2013).

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Section 9
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Appendix A

Glade Reservoir Elevation Change (Alternative 2)

Figure A1. Glade Reservoir Monthly Change in Water Surface Elevation Alternative 2, Current Conditions, Reclamation No Contract Option

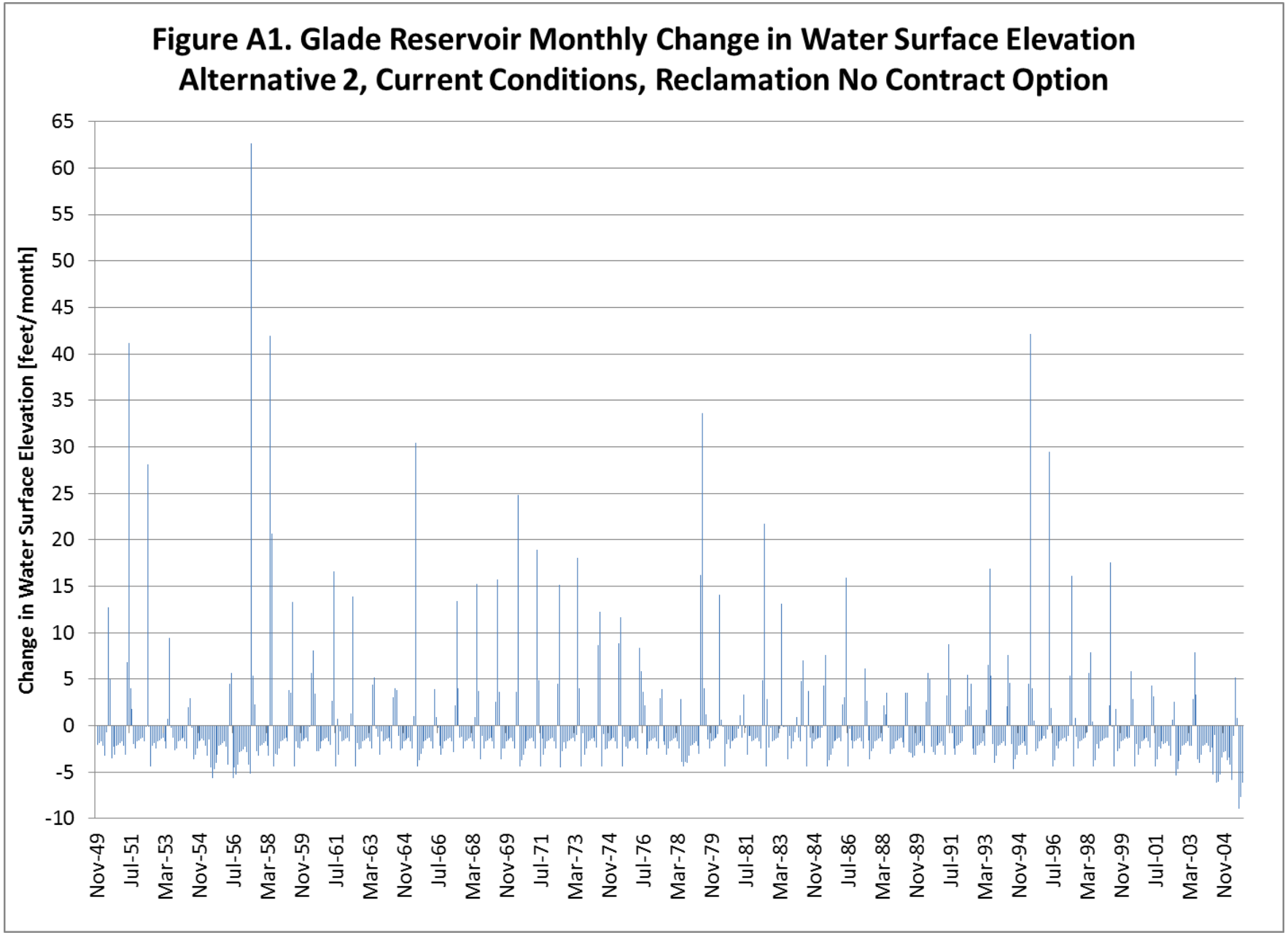


Figure A2. Glade Reservoir Monthly Change in Water Surface Elevation
Alternative 2, Current Conditions, Reclamation Contract Option

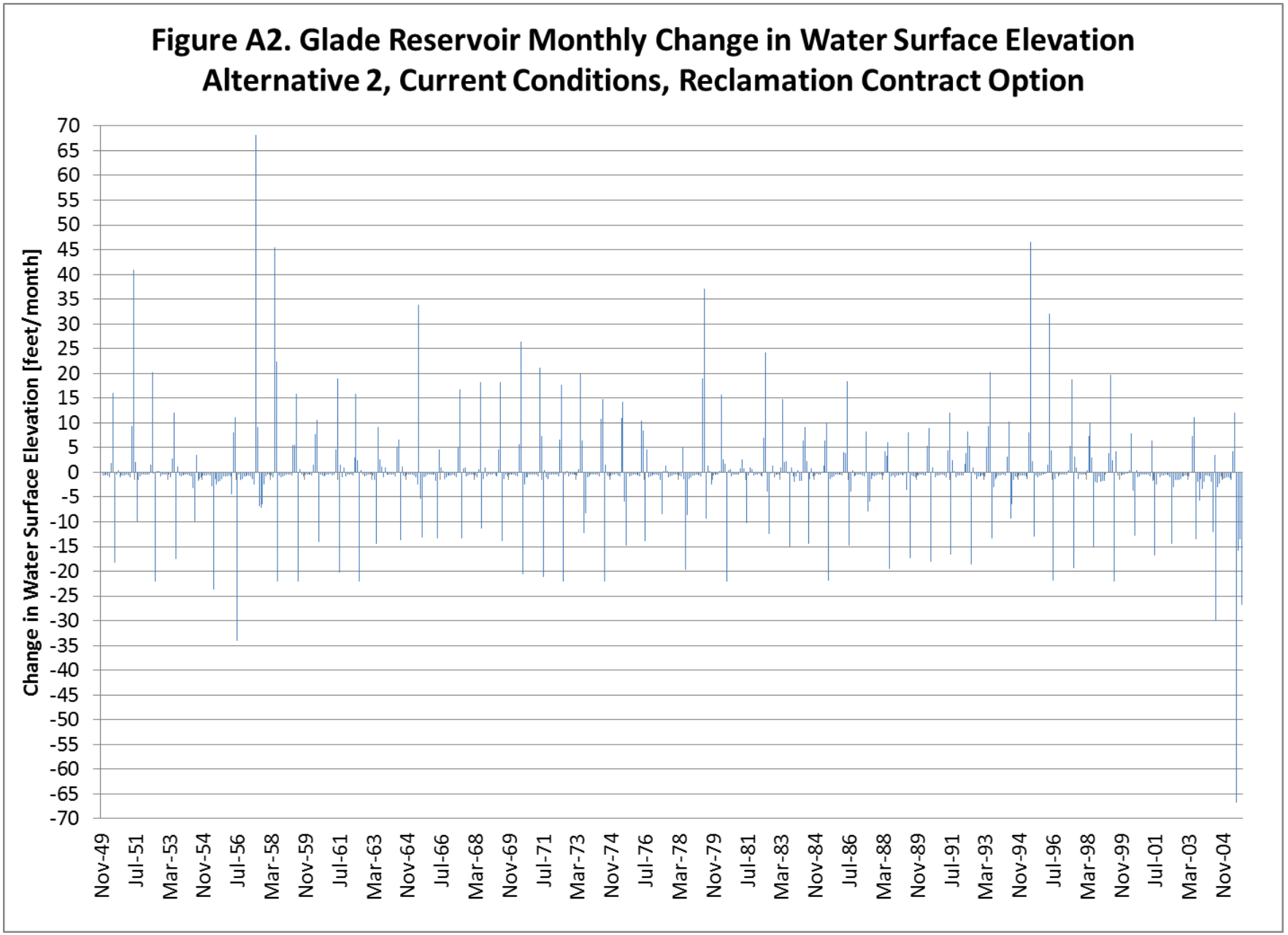


Figure A3. Glade Reservoir Monthly Change in Water Surface Elevation Alternative 2, Future Conditions, Reclamation No Contract Option

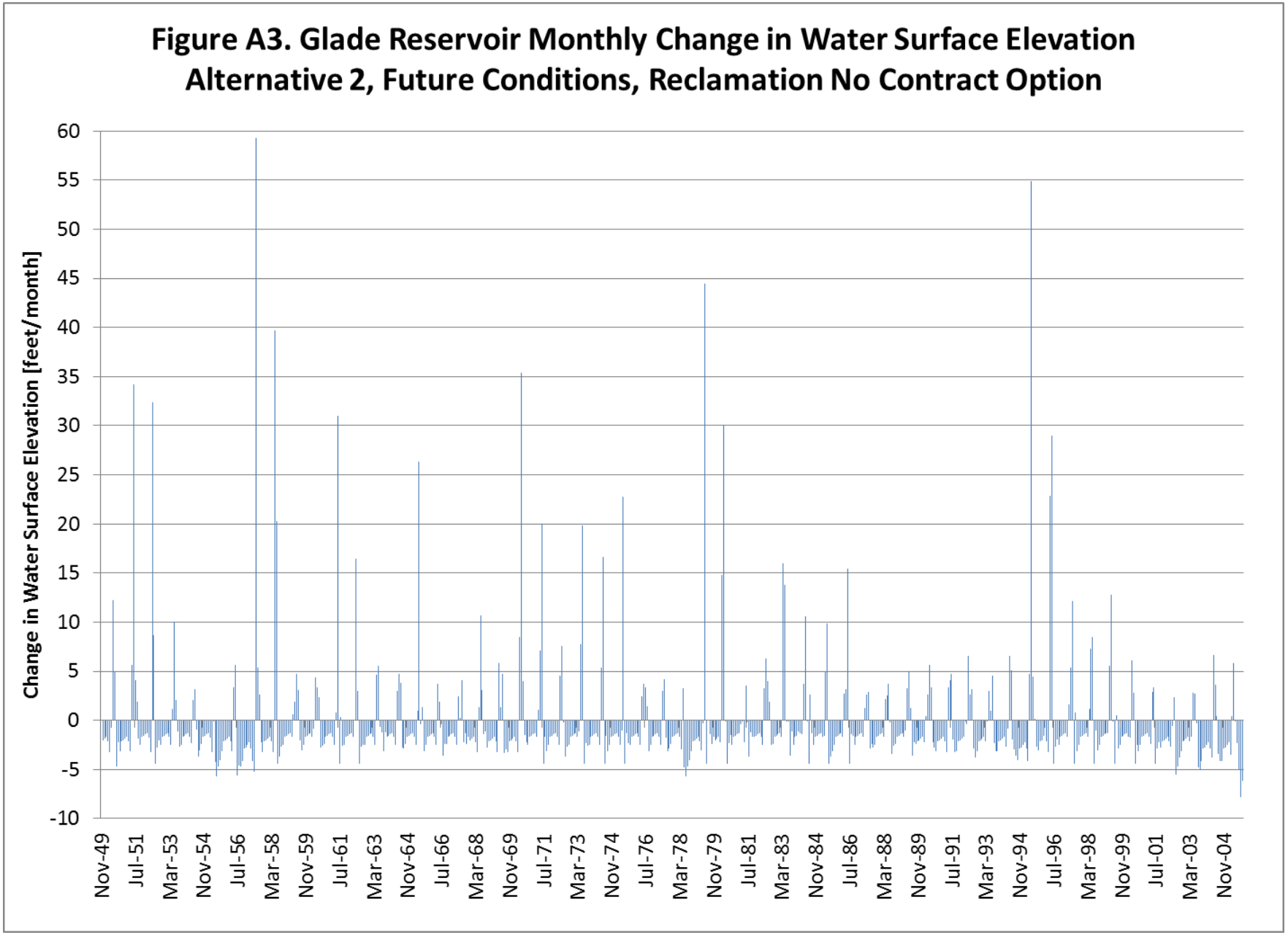
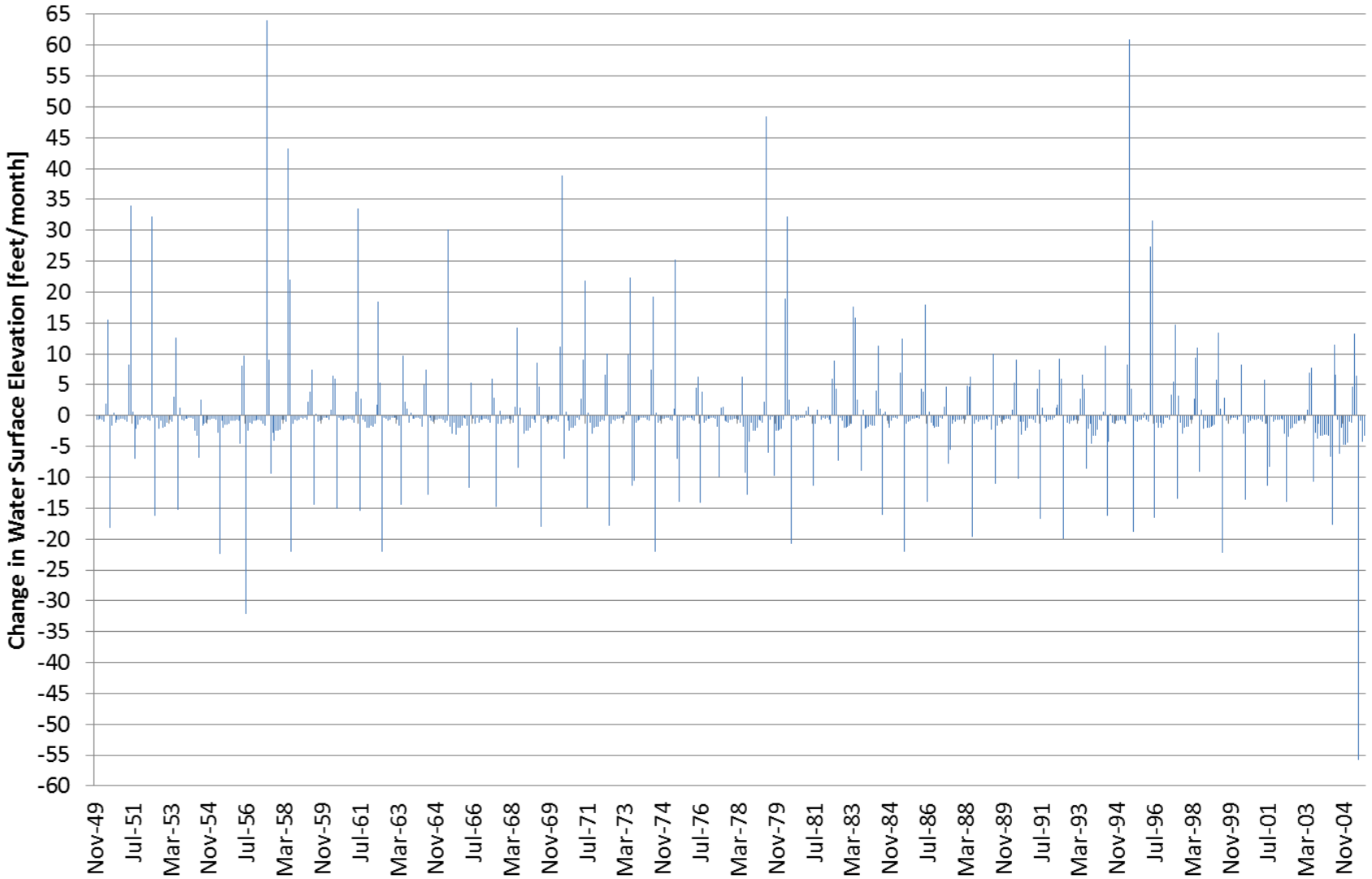


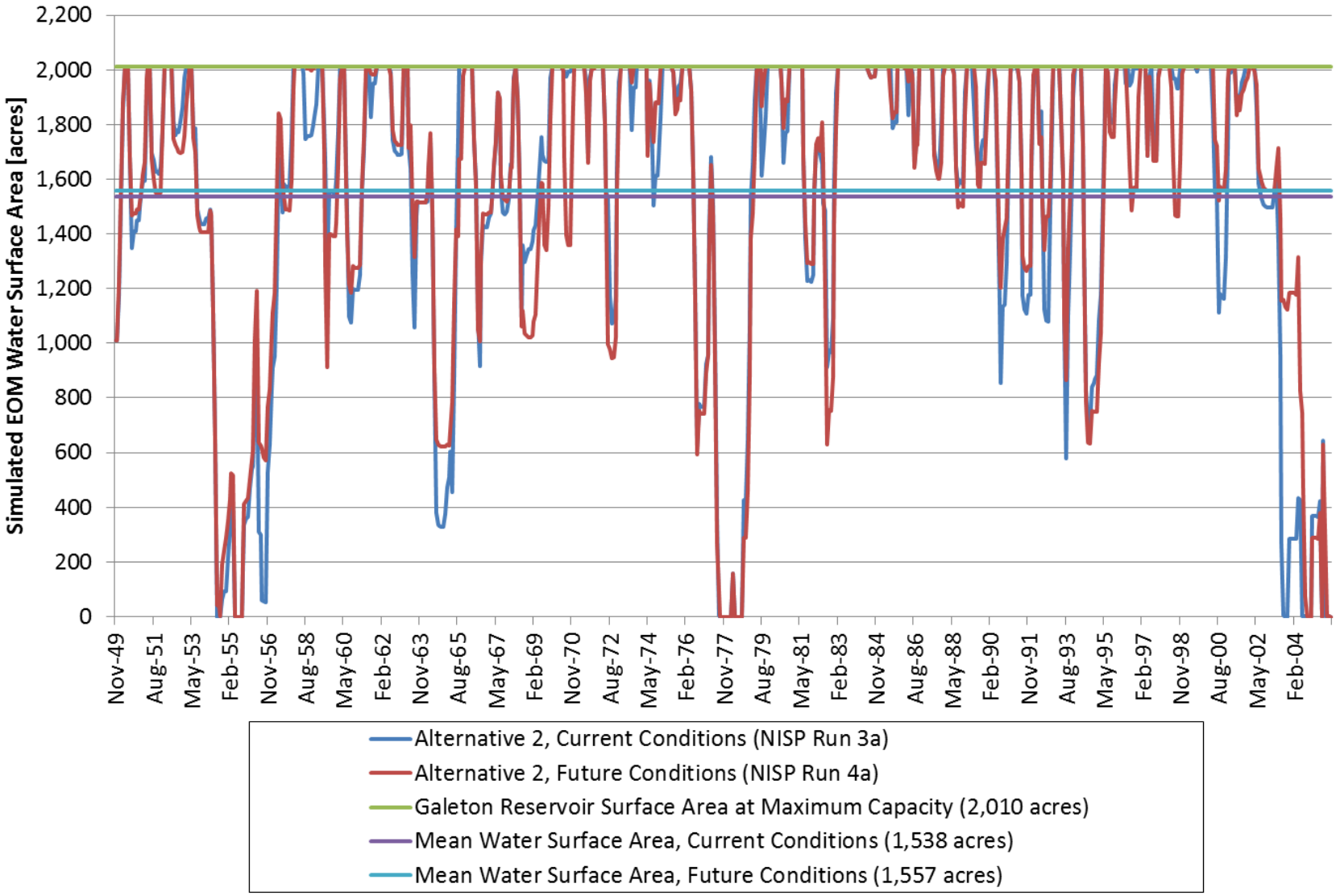
Figure A4. Glade Reservoir Monthly Change in Water Surface Elevation Alternative 2, Future Conditions, Reclamation Contract Option



Appendix B

Galeton Reservoir (Alternative 2)

Figure B1. Galeton Reservoir EOM Water Surface Area, Alternative 2, IY 1950-2005



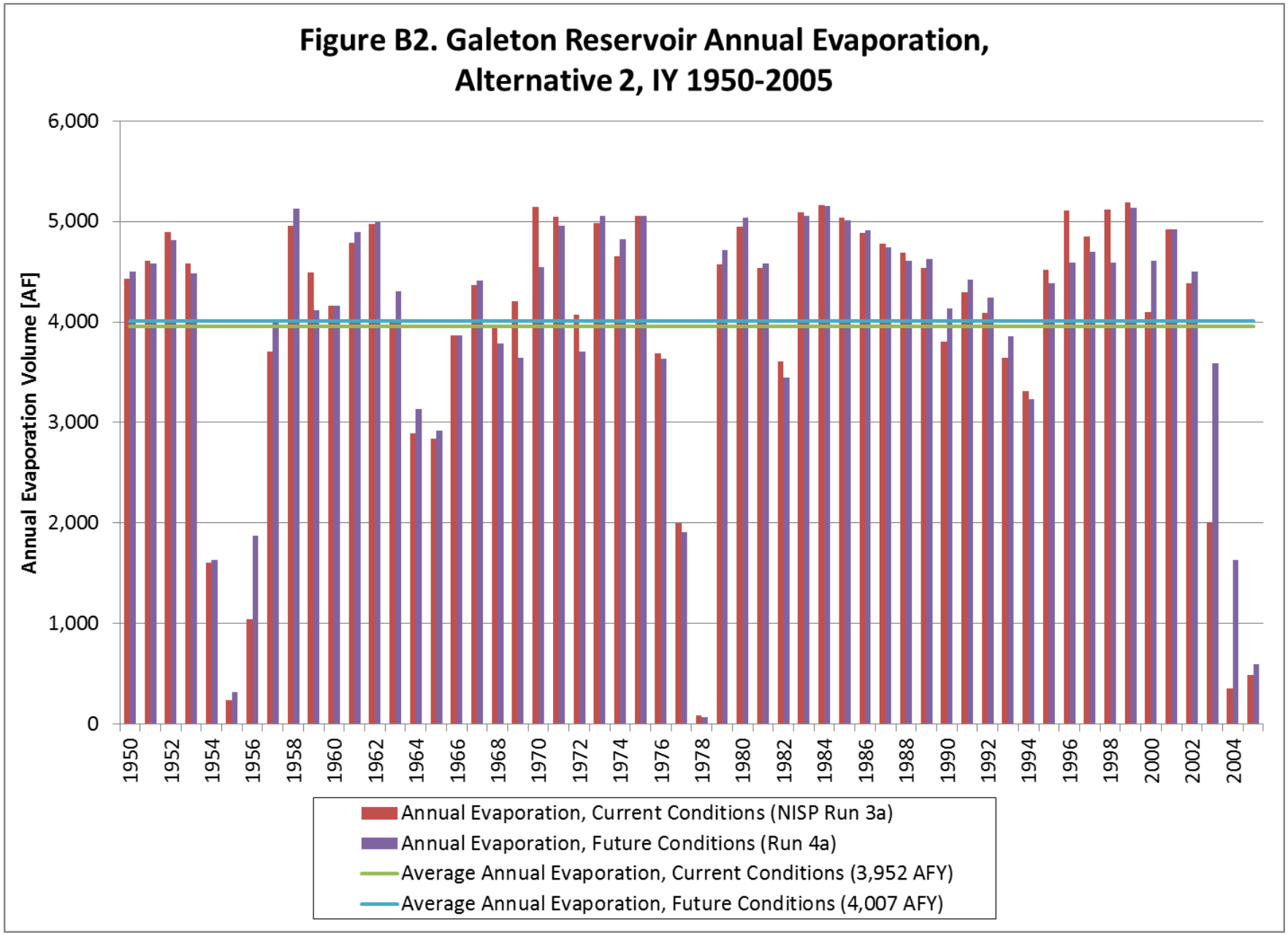
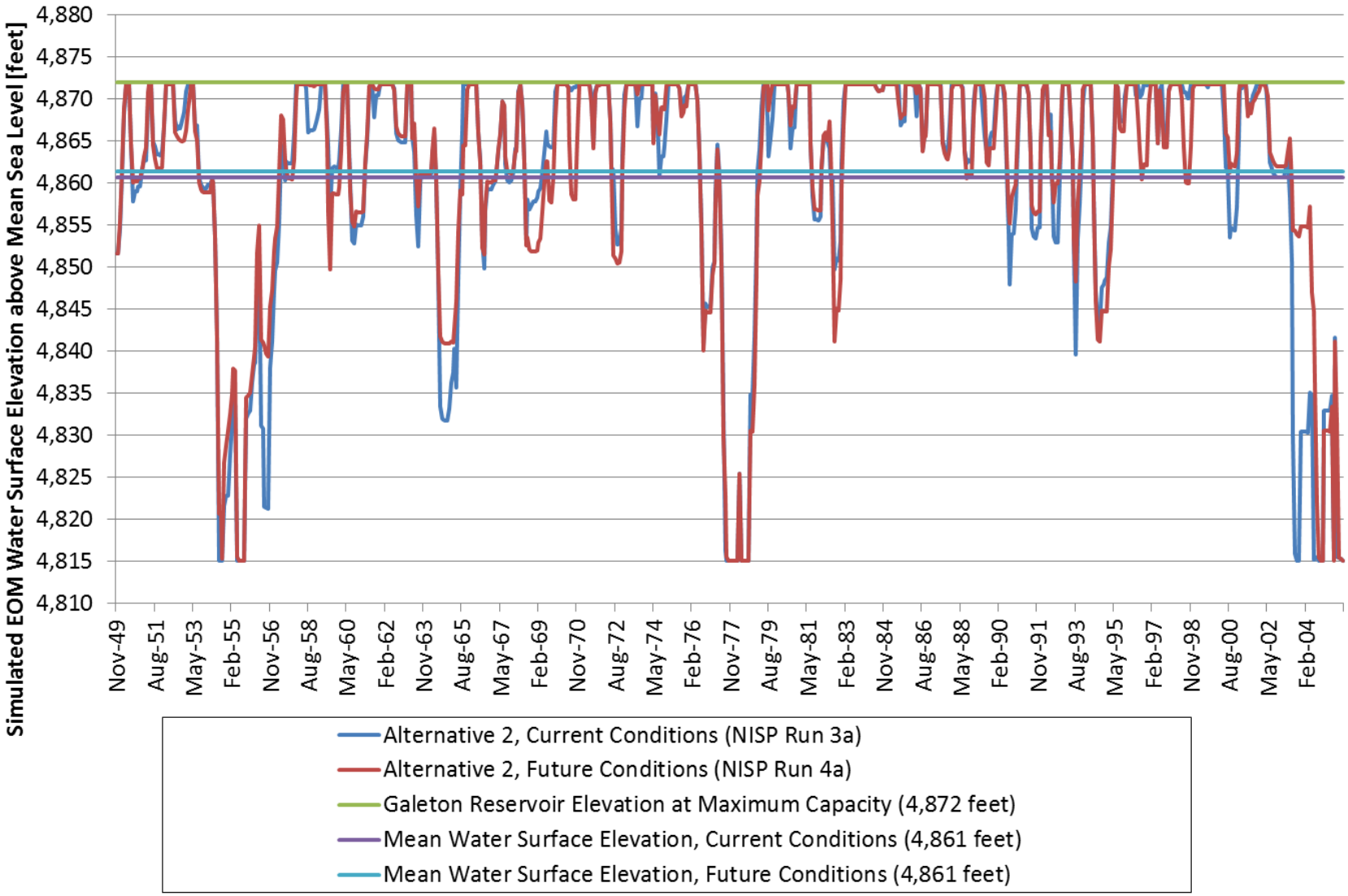


Figure B2. Galeton Reservoir Annual Evaporation, Alternative 2, IY 1950-2005
Annual Evaporation Volume [AF]
6,000
5,000
4,000
3,000
2,000
1,000
0
1950
1952
1954
1956
1958
1960
1962
1964
1966
1968
1970
1972
1974
1976
1978
1980
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
Annual Evaporation, Current Conditions (NISP Run 3a)
Annual Evaporation, Future Conditions (Run 4a)
Average Annual Evaporation, Current Conditions (3,952 AFY)
Average Annual Evaporation, Future Conditions (4,007 AFY)

Figure B3. Galeton Reservoir EOM Water Surface Elevation, Alternative 2, IY 1950-2005



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Appendix C

Horsetooth-Carter Modeling (Nov 2006)

MEMORANDUM

TO: STEVE DOUGHERTY, ERO RESOURCES

FROM: ANDY PINEDA AND CARL BROUWER

SUBJECT: GLADE RESERVOIR TO HORSETOOTH RESERVOIR OPERATIONS USING THE WINDY GAP FIRMING MODEL

DATE: 11/29/2006

CC: CHANDLER PETER, USACE; BETH BOAZ, USBR

BACKGROUND

The proposed Northern Integrated Supply Project (NISP) intends to develop a firm yield of 40,000 acre-feet for 16 participants within the boundaries of the Northern Colorado Water Conservancy District (District) as shown on Figure 1. Participants in NISP located outside the Poudre River Basin require delivery of 29,500 acre-feet per year. These Participants will receive delivery of NISP water via an exchange with Colorado-Big Thompson Project (C-BT) water through the Carter Lake Reservoir facility.

The NISP preferred alternative consists of a combination of the Glade Reservoir complex and the South Platte Water Conservation Project as shown on Figure 2. The hydrologic modeling of NISP has been limited to the Poudre River basin and to the South Platte River basin below the confluence with the Poudre River. The delivery point in that modeling assumes a demand directly out of Glade Reservoir. NISP water will need to be delivered to all of the Participants. This memorandum will present results of a model used to deliver water to non-Poudre Basin Participants and their effects to the operation of the C-BT system

The water operation and planning model, BESTSM, has been configured to model the east and west slope collection and distribution systems for the C-BT and Windy Gap Projects (Windy Gap Firming Project – Modeling Report, Boyle Engineering Corp., December 2003). BESTSM as used in the Windy Gap Firming Project EIS (WGFP) was modified to simulate the following two NISP operations. The first would be to deliver water from Glade Reservoir to the Poudre River in-lieu of C-BT releases from Horsetooth Reservoir. If C-BT deliveries to the Poudre River are insufficient to supply the NISP delivery out of Carter Lake, then the model would deliver water directly to Horsetooth Reservoir via a Glade to Horsetooth pipeline. These operations are shown schematically in Figure 3.

OPERATIONAL SCENARIOS

The NISP operation was applied to two operational scenarios conducted by the WGFP. The WGFP modeled an "Existing Conditions" run which represents the C-BT and Windy Gap Projects under current conditions, including demands facilities, agreements, operations, and administration of the Colorado River. The purpose of the existing conditions scenario is to model conditions as if they occurred under the same hydrologic conditions that existed through the modeled period (1950 – 1996). The second scenario modeled the same NISP operation on the WGFP preferred alternative of a 90,000 ac-ft Chimney Hollow Reservoir with the pre-positioning operation.

NISP OPERATIONAL RULES FOR THE WGFP-BESTSM MODEL

The following operations and rules were configured in the WGFP-BESTSM model to simulate the NISP operation.

1. Addition of a reservoir simulating the NISP Reservoir (Glade)
    a. Annual inflow of 29,500 ac-ft
    b. Annual inflow input in April of each simulation year
    c. Increased by 1% to account for transmission losses for the NISP participants out of Carter Lake (this rule was already built into the WGFP model)

2. Addition of operational rules to release to Poudre River C-BT demands from Glade
    a. Release to agricultural C-BT water demands
    b. Schedule from April through October

3. Addition of an operational rule to release water from Glade to Horsetooth Reservoir
    a. Capacity of 40 cfs (approximately 2,400 ac-ft/month)
    b. Releases during the non-irrigation season (November 1 – March 31)

4. Addition of an operation rule to release water from Carter Lake for the NISP participants

The monthly NISP water demand schedule from Carter Lake is shown in the following table:

NISP DEMAND FROM CARTER LAKE (AC-FT)

Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Total
1623	1623	1475	1328	1623	2360	2950	3688	4130	3393	2950	2360	29500

The Poudre C-BT demands are shown in Table A-1. The Poudre C-BT demands occur primarily in the April to October time period.

RESULTS OF SCENARIO RUNS

The results of the scenario runs were compared with WGFP model runs for the existing conditions scenario and the Chimney Hollow Reservoir scenario as provided by Ms. Heather Thompson of Boyle Engineering. The following data was compared with those runs:

- Adams Tunnel diversions
- Unit #3 Pumping
- Carter Lake End of Month Contents
- Horsetooth Reservoir End of Month Contents
- Lake Granby Reservoir End of Month Contents
- C-BT demands
- Diverted East Slope Water to Storage

Results from the first two scenario runs are summarized in the following tables and charts. Table A-2 summarizes the monthly results for the Adams Tunnel, Unit #3 pumping, Carter Lake, Horsetooth, and Granby end of month contents for the WGFP EIS runs. Table A-3 summarizes the monthly results for the C-BT demands and Diverted East Slope Water to Storage (East Slope Yield) for the WGFP EIS runs. Comparisons of the WGFP run to the NISP Operation run for end of

month contents for Carter Lake, Horsetooth Reservoir and Granby are also shown in the accompanying charts. Tables A-4, A-5 and A-6 show the month by year summary of the Glade Reservoir operation of releases to Horsetooth, Glade Reservoir to Poudre River and Horsetooth Reservoir to Poudre.

Tables B-2 through B-6 show the same data for the existing conditions runs.

CONCLUSION

The WGFP BESTSM model was modified to include NISP operations of water deliveries from Glade Reservoir to the Poudre River in-lieu of C-BT deliveries from Horsetooth, Glade Reservoir deliveries to Horsetooth, and to NISP participants out of Carter Lake. The modeling runs showed that these operations are feasible and do not adversely change the diversion of water from the west slope by the C-BT Project under the operating criteria set forth in the model. In general, the end of month contents in Carter Lake tended to be lower when compared to the WGFP model runs. The amount of pumping into Carter Lake from Unit #3 was increased by approximately 30,000 ac-ft per year for the NISP scenarios. Each NISP scenario showed that Horsetooth Reservoir levels would be, at times, higher than the corresponding WGFP run. Annual water level fluctuations in Horsetooth are shown to be less than in the WGFP runs. Exceptions to this are during dry years or when the District issues larger quota allocations. The quantities of east slope (Big Thompson River) diversions were not affected in any of the NISP operation scenarios as compared to the WGFP runs.

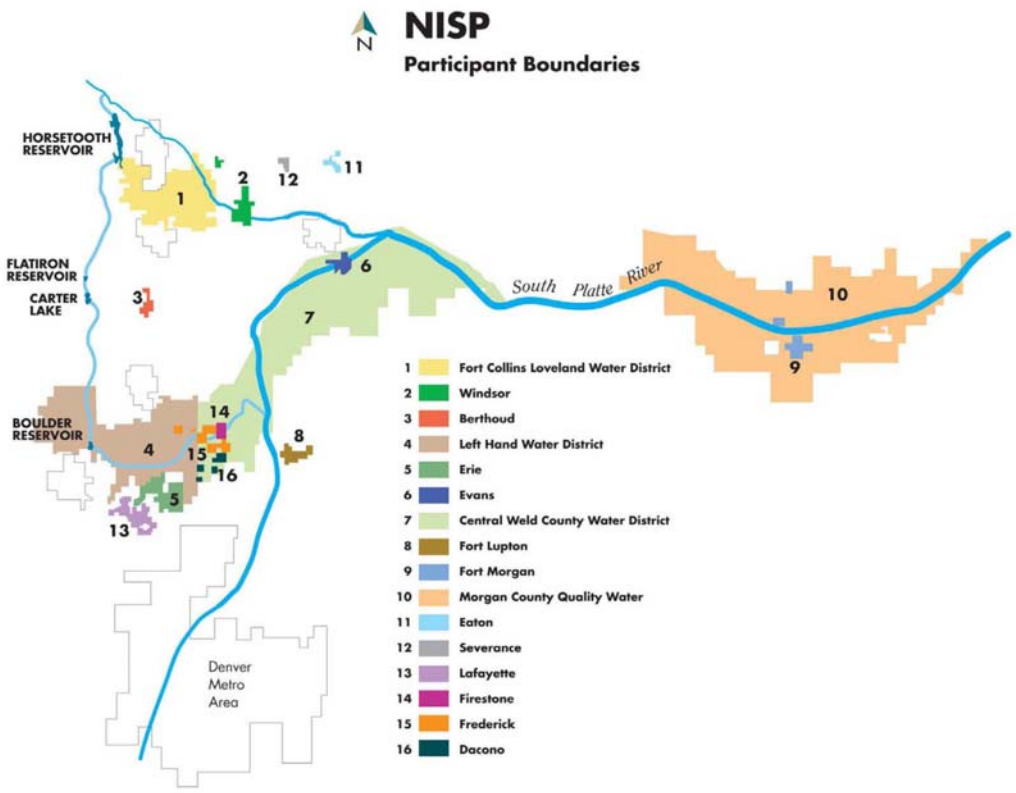


Figure 1 - NISP Participant Boundaries

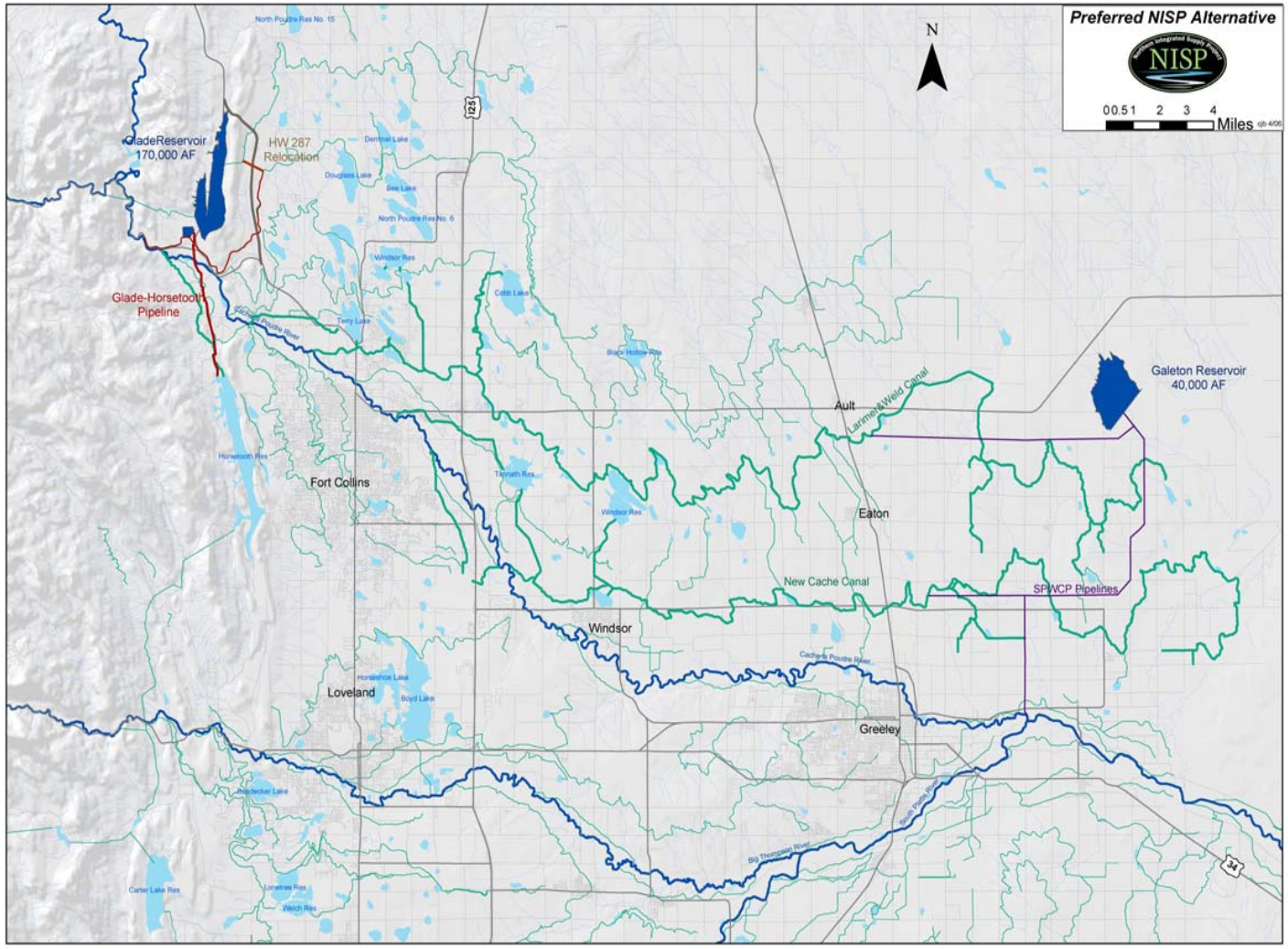


Figure 2 - NISP Preferred Alternative 1

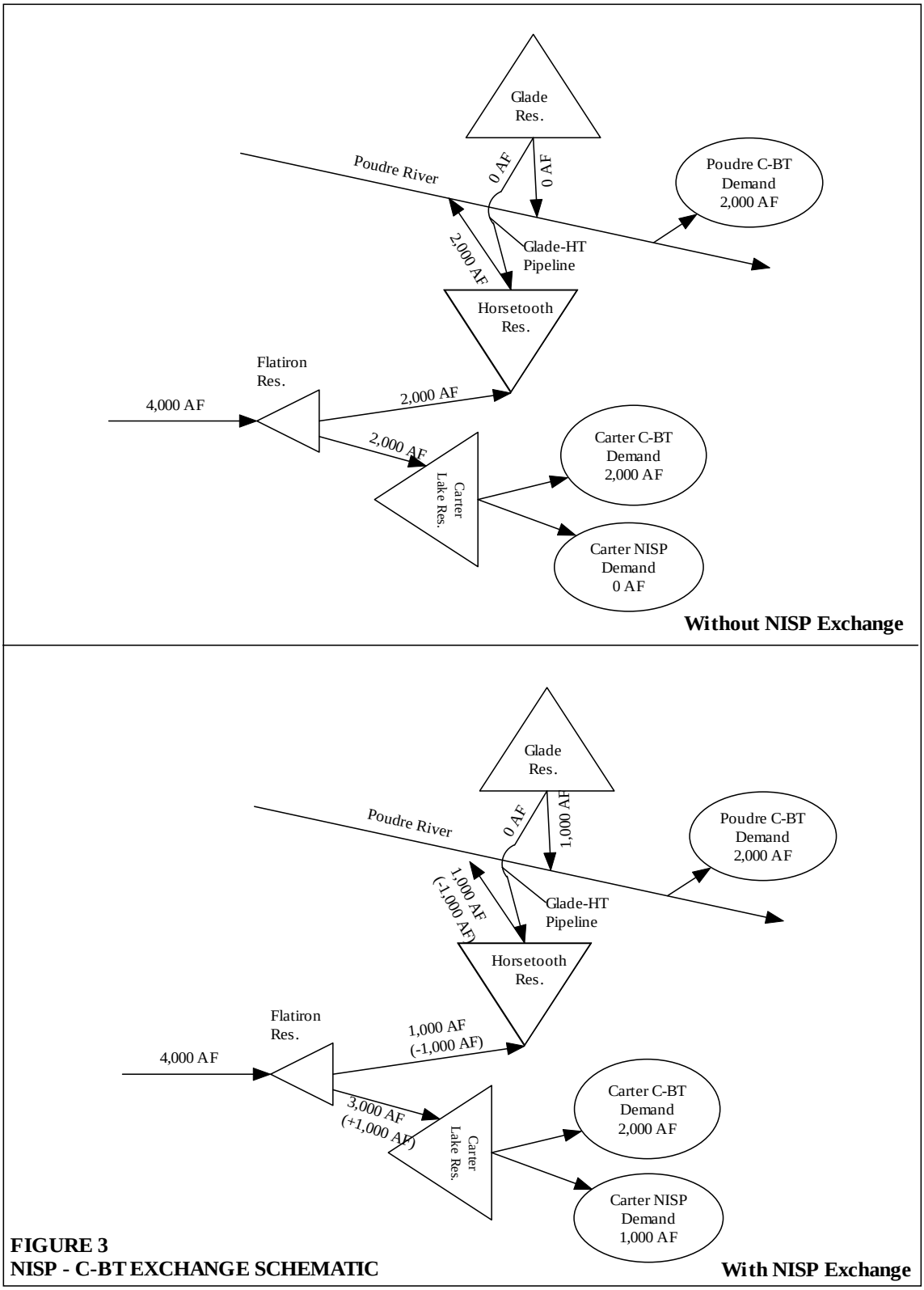


FIGURE 3
NISP - C-BT EXCHANGE SCHEMATIC

Table No. or Chart	Description	No. of Pages
	Poudre River – WGFP EIS Run	
Table A-6	Month by year summary of Horsetooth Reservoir deliveries to Poudre River – WGFP EIS Run	1
Table B-4	Month by year summary of NISP reservoir deliveries to Horsetooth Reservoir – WGFP Existing conditions Run	1
Table B-5	Month by year summary of NISP reservoir deliveries to the Poudre River – WGFP Existing conditions Run	1
Table B-6	Month by year summary of Horsetooth Reservoir deliveries to Poudre River – WGFP Existing conditions Run	1

Table A-1
Bestsm WGFP Model - Sum of Poudre River C-BT Ag Demands (ac-ft)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Sum of HT to Po	Month No.												
Year	1	2	3	4	5	6	7	8	9	10	11	12	Grand Total
1950	1605	0	0	0	0	0	252	2626	1671	9389	11370	4480	31394
1951	1405	0	0	0	0	0	221	2298	1462	8216	9949	3920	27470
1952	1204	0	0	0	0	0	189	1970	1253	7042	8528	3360	23546
1953	1605	0	0	0	0	0	252	2626	1671	9389	11370	4480	31394
1954	2007	0	0	0	0	0	315	3283	2089	11737	14213	5600	39243
1955	19	0	0	0	0	0	0	11846	1271	8804	11808	5497	39243
1956	170	0	0	0	0	0	0	2357	530	8229	9464	6720	27470
1957	232	0	0	0	0	0	0	0	0	4104	9951	9258	23546
1958	309	0	0	0	0	0	0	48	2026	12164	16788	7907	39243
1959	75	0	0	0	0	0	0	0	1853	8370	14545	6552	31394
1960	981	0	0	0	0	0	0	0	339	6610	13451	6089	27470
1961	49	0	0	0	0	0	0	0	0	5816	12174	5507	23546
1962	14	0	0	0	0	0	0	1585	41	9676	11628	6489	29432
1963	19	0	0	0	0	0	1131	8149	3655	11118	11025	4147	39243
1964	992	0	0	0	0	0	0	7065	2264	8858	11328	4812	35319
1965	154	0	0	0	0	0	0	6954	469	1456	10602	3910	23546
1966	19	0	0	0	0	0	0	3735	4949	12502	14103	3936	39243
1967	53	0	0	0	0	0	0	704	1782	3022	13539	8370	27470
1968	2018	0	0	0	0	0	0	1163	569	6840	7508	5447	23546
1969	882	0	0	0	0	0	0	0	1207	10024	12265	3092	27470
1970	13	0	0	0	0	0	0	0	0	5962	14103	3468	23546
1971	11	0	0	0	0	0	0	0	0	10283	10629	2622	23546
1972	1259	0	0	0	0	0	0	1924	1355	10979	14465	1412	31394
1973	2163	0	0	0	0	0	0	0	0	7448	13684	4176	27470
1974	37	0	0	0	0	0	0	1333	26	15946	17598	4304	39243
1975	5185	0	0	0	0	0	0	3087	408	5332	13374	4008	31394
1976	5832	0	0	0	0	0	0	528	3711	13230	12735	3208	39243
1977	4864	0	0	0	0	0	0	2955	6446	10837	9682	4458	39243
1978	653	0	0	0	0	0	0	0	0	8821	11277	2796	23546
1979	2838	0	0	0	0	0	0	0	0	9968	8388	2351	23546
1980	590	0	0	0	0	0	0	0	374	12020	11047	3440	27470
1981	4083	0	0	0	0	0	0	522	3202	13878	11841	5717	39243
1982	5566	0	0	0	0	0	0	669	201	4860	8487	3763	23546
1983	5162	0	0	0	0	0	0	0	0	3574	6490	4396	19621
1984	1366	0	0	0	0	0	0	0	593	14613	8133	2764	27470
1985	818	0	0	0	0	0	2992	3079	7399	5862	6361	959	27470
1986	11	0	0	0	0	0	0	7034	0	6557	7687	2257	23546
1987	13	0	0	0	0	0	839	6729	2696	10029	5661	1502	27470
1988	15	0	0	0	0	0	1259	4148	1026	9143	9805	5998	31394
1989	19	0	0	0	0	0	1264	7752	2002	14363	11886	1957	39243
1990	7870	0	0	0	0	0	0	3853	0	3933	6113	1778	23546
1991	15	0	0	0	0	0	44	2755	1612	14320	8839	3809	31394
1992	715	0	0	0	0	0	247	8636	134	9483	7126	1129	27470
1993	491	0	0	0	0	0	0	3051	515	12320	5524	1645	23546
1994	938	0	0	0	0	0	120	4681	7096	15309	9579	1521	39243
1995	1002	0	0	0	0	0	0	0	0	3386	18175	8831	31394
1996	11	0	0	0	0	0	0	3596	1020	9221	6864	2834	23546
Grand Total	65354	0	0	0	0	0	9125	122741	68914	425045	511161	196673	1399013
Average	1391	0	0	0	0	0	194	2612	1466	9044	10876	4185	29766

TABLE A-2 Summary of WGFP Model Runs - WGFP EIS Alternative

WGFP Bestsm modeling results

(1) WGFP EIS run

(2) WGFP EIS w/ NISP Operations-Substitute water in-lieu of HT releases to Poudre; 40 cfs pipeline to HT

Month 10 = October

Units: Ac-ft

		Adams Tunnel		Unit 3 Pumping		EOM - Carter Lake		EOM - Horsetooth		EOM-Granby	
WY	Month	WGFP-EIS Run	WGFP-EIS w/ NISP Run	WGFP-EIS Run	WGFP-EIS w/ NISP Run	WGFP-EIS Run	WGFP-EIS w/ NISP Run	WGFP-EIS Run	WGFP-EIS w/ NISP Run	WGFP-EIS Run	WGFP-EIS w/ NISP Run
1950	10	18546	18546	1523	1523	47576	45193	70772	70772	400680	400679
1950	11	17455	17455	1544	1544	45618	41604	68267	68267	386658	386658
1950	12	33818	33818	5192	5192	47324	41685	71837	71838	353782	353782
1950	1	33818	33818	25353	25756	69198	62493	75352	74949	320646	320646
1950	2	30545	30545	20319	21134	86184	78975	80959	79741	291034	291034
1950	3	22364	22364	14226	14226	96764	87936	84180	82963	270817	270817
1950	4	17455	17455	10982	12816	101721	92370	81127	78334	268034	268034
1950	5	33818	33818	15948	18616	104107	94472	83347	80542	279879	279879
1950	6	32727	32727	8420	17793	96658	92701	91987	81514	349012	349012
1950	7	33818	33818	6956	15076	77633	77635	88752	79673	334725	334725
1950	8	33818	33818	6321	9746	58271	58271	84907	83902	302586	302586
1950	9	25871	25328	12127	15107	54508	54508	77666	77667	280638	281181
1951	10	18190	18546	11023	11819	57607	56021	71805	71372	264141	264327
1951	11	17455	17455	10650	12428	64884	63442	74316	72105	249134	249321
1951	12	33818	33818	14390	17468	75889	75889	89512	84226	218655	218842
1951	1	27322	33818	12422	13911	84909	84909	99906	99595	192883	186571
1951	2	30425	30545	11212	12550	92892	92892	114866	113338	163641	157209
1951	3	22364	22364	12487	14126	101879	101879	120232	117066	142460	136032
1951	4	17455	17455	4407	6791	101720	101720	124615	119293	132270	125850
1951	5	33818	33818	14569	17483	104107	104041	129930	124022	199039	192644
1951	6	32727	32727	6972	10763	96658	96658	141242	133035	313224	306855
1951	7	10273	14466	3850	8425	76802	76802	120829	120931	370315	359776
1951	8	12029	15473	4402	7829	58272	58272	100782	110920	376240	362278
1951	9	17696	20690	10538	13518	54508	54508	89350	103425	361374	344427
1952	10	14377	16773	10131	12516	57607	57607	83968	99242	351546	332207
1952	11	12590	14238	10487	12126	64884	64884	81916	97181	342169	321185
1952	12	27022	17236	14227	15867	75889	75889	90489	94373	319164	307957
1952	1	26293	21415	12257	13747	84909	84909	99485	99484	294623	288289
1952	2	30546	30546	11074	12412	92892	92892	113652	112381	265256	258922
1952	3	22364	22364	12323	13962	101879	101879	119413	116504	244825	238495
1952	4	17455	17455	5868	7624	101720	101720	122463	117365	265136	258810
1952	5	17498	22782	11560	12874	104773	103942	136285	136288	373469	361882
1952	6	20548	19956	12811	11768	108421	103870	148338	149017	537194	526229
1952	7	4386	4386	957	1108	91834	83130	133233	141014	537423	537434
1952	8	10718	13060	1472	3681	68443	58678	113046	129411	538148	538148
1952	9	9891	20208	1523	11873	57238	54792	103450	123177	531220	520906
1953	10	14905	18546	9005	12713	57873	56675	96188	117515	515410	501456
1953	11	12616	15464	10548	13383	64935	64935	93667	114982	504101	487300
1953	12	16380	18028	14503	16142	75941	75941	91108	112413	487827	469371
1953	1	26238	15860	12534	14561	84939	84939	99906	109387	463413	455329
1953	2	30545	20498	11328	13099	92916	92916	114500	114863	433892	435856
1953	3	22364	22364	12628	15098	101924	101900	119318	120525	413362	415326
1953	4	17455	17455	9662	12366	106822	106822	117807	116861	403730	405693
1953	5	33818	33818	9365	12034	104179	104179	127172	125900	426884	428842

TABLE A-2 Summary of WGFP Model Runs - WGFP EIS Alternative

WGFP Bestsm modeling results

(1) WGFP EIS run

(2) WGFP EIS w/ NISP Operations-Substitute water in-lieu of HT releases to Poudre; 40 cfs pipeline to HT

Month 10 = October

Units: Ac-ft

		Adams Tunnel		Unit 3 Pumping		EOM - Carter Lake		EOM - Horsetooth		EOM-Granby	
WY	Month	WGFP-EIS Run	WGFP-EIS w/ NISP Run	WGFP-EIS Run	WGFP-EIS w/ NISP Run	WGFP-EIS Run	WGFP-EIS w/ NISP Run	WGFP-EIS Run	WGFP-EIS w/ NISP Run	WGFP-EIS Run	WGFP-EIS w/ NISP Run
1953	6	32727	32727	7462	10248	96658	96658	135820	132516	515784	517737
1953	7	11633	13343	1051	3538	78004	76914	113948	118737	529215	529457
1953	8	9432	11428	1523	3427	61169	58683	91551	107797	536427	534683
1953	9	16099	21586	7309	12853	54791	54792	78986	99722	520511	513281
1954	10	18546	18546	10812	10897	55796	53415	69898	91796	501337	494109
1954	11	17455	17455	12205	15165	64194	63140	69792	88717	485951	478724
1954	12	33818	25680	15569	18259	75942	75942	82778	90908	453029	453938
1954	1	33818	29126	12865	14892	84939	84939	97937	99906	420046	425649
1954	2	30545	30545	11618	13390	92916	92916	111470	112099	389872	395475
1954	3	22364	22364	12957	14464	101924	101359	115112	114667	369999	375599
1954	4	17455	17455	10420	12276	106822	105937	110888	108700	367507	373105
1954	5	33818	33818	12455	16006	104821	104821	110684	107953	381011	386596
1954	6	32727	32727	10605	13812	97680	97680	110840	106502	380650	386218
1954	7	33818	33818	8506	12264	77632	77632	99107	102454	357422	362976
1954	8	33818	25002	11522	14827	58682	58682	83847	87482	325645	339999
1954	9	32727	32071	14897	17962	54792	54792	77665	77663	297110	312111
1955	10	18546	18546	10109	10194	54846	52463	70618	70616	283915	298912
1955	11	17455	17455	12205	12205	63246	59231	70512	70510	270143	285139
1955	12	33818	33818	16514	22157	75942	75942	82553	76910	238330	253334
1955	1	33818	33818	12865	14891	84939	84939	97711	90582	206415	221430
1955	2	30545	30545	11618	13390	92916	92916	111244	102782	177195	192207
1955	3	22364	22364	12957	14464	101924	101359	114886	105355	156707	171711
1955	4	17455	17455	12298	12276	106822	104059	109262	99558	152818	167808
1955	5	33818	33818	15708	16900	104380	100148	97722	98487	176976	191914
1955	6	32727	32727	11697	16603	97458	94938	100848	97475	214746	229620
1955	7	33818	33818	8997	15268	77632	77634	90050	88891	205184	220007
1955	8	33818	33818	8590	11894	58682	58682	80363	83730	181577	196363
1955	9	32727	32727	15195	18260	54792	54792	71597	71981	149467	164238
1956	10	18546	18546	11302	11387	56928	54546	66631	67014	131683	146448
1956	11	17455	17455	11327	12576	64935	62170	68616	67750	118623	133386
1956	12	33818	33818	14339	18736	75941	75942	83954	78693	86930	101709
1956	1	13187	27965	5338	14395	77908	84939	87394	88318	76163	76171
1956	2	2463	2471	1830	2270	76554	82227	84943	85867	75886	75886
1956	3	2067	2067	1315	2355	74707	78724	82365	83288	75622	75622
1956	4	7797	7797	5033	4826	74397	76017	78299	79221	93121	93121
1956	5	33818	33818	20911	20392	83675	82103	74564	78080	201675	201675
1956	6	32727	32727	19109	18424	87977	82882	74778	78622	268119	268119
1956	7	33818	33818	14244	20132	76808	73521	65537	71717	245717	245717
1956	8	33818	33818	1523	7629	58748	58274	71739	81228	218844	218844
1956	9	32727	26990	12050	15587	54508	54508	70571	77669	186599	192334
1957	10	18546	18546	10014	10099	55646	53264	66679	74003	168281	174014
1957	11	17455	17455	12057	12057	64500	60486	68017	77601	152947	158679
1957	12	33818	33818	14609	20252	75889	75889	83035	86973	120925	126662
1957	1	33818	31743	12256	14282	84920	84920	99524	99907	89604	97423

TABLE A-2 Summary of WGFP Model Runs - WGFP EIS Alternative

WGFP Bestsm modeling results

(1) WGFP EIS run

(2) WGFP EIS w/ NISP Operations-Substitute water in-lieu of HT releases to Poudre; 40 cfs pipeline to HT

Month 10 = October

Units: Ac-ft

		Adams Tunnel		Unit 3 Pumping		EOM - Carter Lake		EOM - Horsetooth		EOM-Granby	
WY	Month	WGFP-EIS Run	WGFP-EIS w/ NISP Run	WGFP-EIS Run	WGFP-EIS w/ NISP Run	WGFP-EIS Run	WGFP-EIS w/ NISP Run	WGFP-EIS Run	WGFP-EIS w/ NISP Run	WGFP-EIS Run	WGFP-EIS w/ NISP Run
1957	2	15608	23427	8466	13249	90325	92916	101460	105691	75651	75650
1957	3	1889	1889	1241	2582	88758	89703	98996	103224	75855	75855
1957	4	4587	4587	1776	2106	84774	83333	94683	98907	79389	79389
1957	5	28468	28468	19604	19803	96488	92257	117985	122017	145146	145146
1957	6	6736	6736	17534	17947	104709	97273	130125	133646	339586	339586
1957	7	4752	4752	3895	3804	93328	81750	117907	125558	504179	504179
1957	8	6344	9822	271	3206	68977	57479	95527	113198	528315	524839
1957	9	8423	22943	426	14245	53093	53101	78859	105839	525592	507601
1958	10	18546	18546	10492	9655	54516	52140	71800	99060	513216	495228
1958	11	17455	17455	12606	15103	63757	62710	71147	95431	500055	482068
1958	12	33818	19734	15569	17301	75455	75455	83453	91030	468458	464550
1958	1	33818	27561	12915	13538	84476	84476	96941	99260	436517	438866
1958	2	30545	30545	11645	12116	92458	92458	108049	111248	408043	410391
1958	3	22364	22364	12978	13750	101445	101445	111377	114428	388579	390927
1958	4	17455	17455	5829	7255	101508	101508	111438	112104	378635	380981
1958	5	14061	13483	17376	16418	105413	102434	136155	136292	519294	522214
1958	6	23203	23203	10322	15232	99570	97681	145525	142904	537020	537017
1958	7	16850	22937	6619	12779	77631	77632	120073	129730	528161	522076
1958	8	25888	25413	10234	14489	58682	58682	87459	108894	505865	500263
1958	9	32727	31840	22966	23595	54194	51216	69676	90187	473111	468398
1959	10	18546	18546	9422	9843	54313	48964	64034	84519	453004	448292
1959	11	17455	17455	12403	15700	63241	59229	64492	82005	436990	432278
1959	12	33818	33818	16192	22551	75942	75942	77606	89471	404316	399602
1959	1	33818	29380	12534	14444	84939	84939	93951	99906	372035	371759
1959	2	30545	30545	11328	13087	92916	92916	108549	113163	342890	342613
1959	3	22364	22364	12628	14665	101924	101901	113371	116366	321734	321458
1959	4	17455	17455	5281	7269	101823	101823	116516	117102	312050	311773
1959	5	30663	30663	15091	17921	104106	103523	126902	125093	344342	344066
1959	6	30899	30899	7603	11820	96555	96555	136302	132064	438156	437882
1959	7	12841	17021	5478	9921	77333	77333	113947	118152	450244	445796
1959	8	15042	18486	6298	10049	58534	58533	87263	106128	445512	437633
1959	9	26484	24140	13862	17374	54792	54792	77243	95838	424428	418897
1960	10	18475	18546	11440	11590	57874	56060	71385	89459	417422	411821
1960	11	17455	15393	10161	12890	64712	64712	74160	86725	406966	403428
1960	12	33818	23763	14562	15780	75942	75942	89571	90488	375145	381663
1960	1	26765	27340	12370	13439	84939	84939	99485	99485	350126	356072
1960	2	30390	30546	11190	12107	92916	92916	114446	113263	322315	328104
1960	3	22364	22364	12463	13985	101924	101924	120157	117335	303816	309603
1960	4	17455	17455	4217	6076	101720	101720	124900	119700	331085	336868
1960	5	33183	33183	13844	16300	103952	103952	133767	125594	386416	392187
1960	6	31521	31521	6344	9441	96443	96443	147387	135853	506710	512467
1960	7	8544	12737	2520	5856	75758	75758	128423	123587	527837	529396
1960	8	14469	17914	5539	7923	57021	57021	104076	112821	517627	515741
1960	9	18427	21421	10553	12490	53050	53050	90262	105136	501219	496340

TABLE A-2 Summary of WGFP Model Runs - WGFP EIS Alternative

WGFP Bestsm modeling results

(1) WGFP EIS run

(2) WGFP EIS w/ NISP Operations-Substitute water in-lieu of HT releases to Poudre; 40 cfs pipeline to HT

Month 10 = October

Units: Ac-ft

		Adams Tunnel		Unit 3 Pumping		EOM - Carter Lake		EOM - Horsetooth		EOM-Granby	
WY	Month	WGFP-EIS Run	WGFP-EIS w/ NISP Run	WGFP-EIS Run	WGFP-EIS w/ NISP Run	WGFP-EIS Run	WGFP-EIS w/ NISP Run	WGFP-EIS Run	WGFP-EIS w/ NISP Run	WGFP-EIS Run	WGFP-EIS w/ NISP Run
1961	10	16149	18545	10167	11591	56171	56170	86124	101029	485868	478594
1961	11	12474	14122	10966	12256	64451	64451	83845	98741	475353	466433
1961	12	24796	16949	14223	14996	75455	75455	90264	95708	451046	449970
1961	1	26289	19844	12253	12876	84476	84476	99260	99259	425098	430468
1961	2	30545	30545	11065	11536	92458	92458	113438	112900	395631	401001
1961	3	22364	22364	12320	13629	101445	101445	119221	117044	374812	380180
1961	4	17455	17455	10965	12824	106507	106507	118028	113471	363295	368660
1961	5	24202	28933	5517	7840	104072	103941	136288	133595	409359	409986
1961	6	3182	5939	15796	15982	110716	107675	149780	149020	519200	517072
1961	7	5539	5539	529	0	92032	84833	135407	140516	533154	531029
1961	8	8379	9191	271	35	67265	57477	110588	127967	535773	532840
1961	9	7469	19754	936	11313	55305	53402	98640	121126	538721	538722
1962	10	14402	16884	9712	14078	57874	57875	93219	115694	535631	538650
1962	11	12404	14051	10466	12104	64935	64935	90840	113302	532396	535410
1962	12	18750	17898	14421	16060	75941	75941	90908	110873	517449	521316
1962	1	26141	15730	12452	13941	84939	84939	99906	108015	495020	509300
1962	2	30545	21609	11255	12594	92916	92916	114766	114864	467621	490837
1962	3	22364	22364	12545	14722	101924	101924	119904	120822	446874	470081
1962	4	17455	17455	3629	5529	100930	100893	124062	122518	501934	525131
1962	5	33818	33818	16192	17579	104684	102675	128564	127790	537679	537663
1962	6	30994	30994	6637	12402	97653	97654	141884	135289	536999	536999
1962	7	16317	20509	6355	10318	77632	77632	119521	122703	537435	537435
1962	8	13478	16922	4905	8125	58682	58682	97290	112195	533615	530173
1962	9	18411	21406	10237	13216	54792	54792	82965	104390	516905	510470
1963	10	18546	18546	9735	9819	54493	52110	75775	97193	500204	493770
1963	11	17455	17455	12309	15269	62999	61944	75665	94111	484310	477877
1963	12	33818	21546	16760	19452	75942	75942	87457	90995	450273	456112
1963	1	31097	27064	12865	14355	84939	84939	99907	99906	420099	429975
1963	2	30545	30545	11618	12957	92916	92916	113438	112099	390604	400479
1963	3	22364	22364	12957	14603	101924	101393	117114	114667	369847	379718
1963	4	17455	17455	10949	12241	106822	105305	111543	108846	363809	373675
1963	5	33818	33818	16839	17436	101739	97424	99144	104499	395315	405159
1963	6	32727	32727	15411	17877	97510	91518	94955	101955	420723	430538
1963	7	33818	33818	8882	19570	77632	77636	84566	92625	395032	404824
1963	8	33818	30631	4996	9164	58682	58682	80251	87495	377072	390032
1963	9	32727	30143	13777	17709	54792	54792	75979	77663	352144	367679
1964	10	18546	18546	9168	10120	52733	50350	68698	70381	335349	350880
1964	11	17455	17455	12304	13214	61403	57388	68873	70555	320332	335862
1964	12	33818	33818	18188	24167	75942	75943	79615	75654	286662	302200
1964	1	33818	33818	12699	14524	84939	84939	95368	89920	253844	269391
1964	2	30546	30546	11479	13684	92916	92916	109424	102641	223977	239523
1964	3	22364	22364	12792	14848	101924	101630	113656	105532	203113	218650
1964	4	17455	17455	11045	12668	106822	105884	110174	100323	190940	206465
1964	5	33818	33818	16546	16987	104105	100643	105557	102398	243043	258519

TABLE A-2 Summary of WGFP Model Runs - WGFP EIS Alternative

WGFP Bestsm modeling results

(1) WGFP EIS run

(2) WGFP EIS w/ NISP Operations-Substitute water in-lieu of HT releases to Poudre; 40 cfs pipeline to HT

Month 10 = October

Units: Ac-ft

		Adams Tunnel		Unit 3 Pumping		EOM - Carter Lake		EOM - Horsetooth		EOM-Granby	
WY	Month	WGFP-EIS Run	WGFP-EIS w/ NISP Run	WGFP-EIS Run	WGFP-EIS w/ NISP Run	WGFP-EIS Run	WGFP-EIS w/ NISP Run	WGFP-EIS Run	WGFP-EIS w/ NISP Run	WGFP-EIS Run	WGFP-EIS w/ NISP Run
1964	6	32727	32727	9309	16476	96833	96834	111345	103306	289291	304707
1964	7	33818	33818	6565	11260	77633	77633	106259	103012	283071	298440
1964	8	20422	18705	5337	9509	58682	58682	87477	90536	272401	289452
1964	9	23733	23367	10899	14830	54792	54792	77663	77660	250912	268314
1965	10	18546	18546	12056	13008	57058	54675	73418	73416	232608	250004
1965	11	17455	17455	11034	13469	64935	62489	75999	74428	217459	234854
1965	12	32855	33818	14175	19122	75941	75942	90912	86222	187450	203893
1965	1	25245	31455	12203	14560	84939	84939	99906	99907	164865	175107
1965	2	29845	30545	11038	13243	92916	92916	114866	114226	136163	145703
1965	3	22364	22364	12298	14805	101924	101924	120862	118583	115405	124938
1965	4	17455	17455	4776	7489	101823	101823	126014	121355	112851	122373
1965	5	33818	33818	12962	16376	104106	104106	129407	128796	175562	185045
1965	6	20775	20775	12749	12762	104194	100471	141994	141856	337051	346498
1965	7	5807	5807	1706	1615	87601	79722	130153	131485	432239	441661
1965	8	7409	9786	321	2596	65977	57069	110515	122539	455074	462104
1965	9	9749	21673	2210	13983	53095	53101	99784	115734	452811	447917
1966	10	18546	18546	11888	11797	56029	53651	92390	108340	441540	436647
1966	11	13068	17098	11791	15856	64451	64451	88665	104606	434361	425439
1966	12	21705	17967	15011	16113	75589	75589	90263	100839	414739	409551
1966	1	27699	16095	12992	13736	84686	84686	99260	99257	388885	395301
1966	2	30545	30545	11645	12031	92669	92669	112747	113627	359664	366081
1966	3	22364	22364	12978	13665	101656	101656	116382	117327	339007	345421
1966	4	17455	17455	10415	11841	106718	106718	113319	111881	333416	339827
1966	5	33818	33818	16186	15840	104001	101634	111415	113137	359846	366242
1966	6	32727	32727	16015	15841	97577	92278	104963	110891	370392	376769
1966	7	33818	33818	9656	18138	77425	76906	86734	96332	347078	353439
1966	8	33818	33818	8910	11945	57904	57905	71781	86098	318594	324944
1966	9	32727	26635	10726	13907	54508	54508	71989	77244	287627	300063
1967	10	18546	18546	10474	10572	52990	50607	66729	71978	273446	285878
1967	11	17455	17455	12754	12217	62387	58373	66820	72065	259233	271664
1967	12	33818	33818	16657	21710	75666	75667	79979	79581	227404	239841
1967	1	33818	33818	12645	13628	84909	84909	96913	95026	195527	207973
1967	2	30545	30545	11213	12045	92892	92892	111996	108772	166629	179073
1967	3	22364	22364	12488	13706	101914	101914	117387	112526	146463	158900
1967	4	17455	17455	10186	11612	106718	106718	116462	109225	149479	161905
1967	5	33818	33818	8426	10552	104105	104105	130517	121020	187023	199405
1967	6	28949	28949	5672	8440	96494	96494	144342	132943	286360	298692
1967	7	4962	4962	12011	11053	91787	87618	132276	123956	342229	354525
1967	8	10672	12724	271	1892	63011	57475	107883	113241	339406	349629
1967	9	12945	21488	5353	13328	53097	53101	91644	105440	334046	335722
1968	10	17954	18546	10966	11428	56772	54982	84705	100522	320542	321626
1968	11	11883	15325	10967	13981	64661	64662	82105	97913	312919	310561
1968	12	26138	16927	14223	15117	75666	75666	90264	95263	289266	296121
1968	1	25317	21427	12253	12791	84686	84686	99260	99259	265281	276030

TABLE A-2 Summary of WGFP Model Runs - WGFP EIS Alternative

WGFP Bestsm modeling results

(1) WGFP EIS run

(2) WGFP EIS w/ NISP Operations-Substitute water in-lieu of HT releases to Poudre; 40 cfs pipeline to HT

Month 10 = October

Units: Ac-ft

		Adams Tunnel		Unit 3 Pumping		EOM - Carter Lake		EOM - Horsetooth		EOM-Granby	
WY	Month	WGFP-EIS Run	WGFP-EIS w/ NISP Run	WGFP-EIS Run	WGFP-EIS w/ NISP Run	WGFP-EIS Run	WGFP-EIS w/ NISP Run	WGFP-EIS Run	WGFP-EIS w/ NISP Run	WGFP-EIS Run	WGFP-EIS w/ NISP Run
1968	2	29901	30546	11070	11457	92669	92669	114221	113523	237088	247191
1968	3	22364	22364	12319	13092	101656	101656	120197	117861	215925	226023
1968	4	17455	17455	10003	11429	106718	106718	120853	116137	204327	214417
1968	5	33179	33761	7017	9039	104059	104059	136286	130351	215611	225088
1968	6	26679	30536	4971	7738	96494	96494	149017	143782	331596	337188
1968	7	10640	14832	4451	7665	76429	76429	131140	132819	349328	350720
1968	8	6341	8614	571	2412	58892	57728	114913	124161	353836	352955
1968	9	14996	19158	7742	11643	54170	54171	102568	117298	342199	337157
1969	10	17110	18546	10638	11438	57252	56298	96853	112458	328005	321529
1969	11	12445	15049	10779	12625	64712	64712	94232	109828	319666	310587
1969	12	15493	17140	14336	15023	75719	75719	90859	106447	305545	294813
1969	1	26375	14952	12366	12904	84716	84716	99260	101988	281246	281933
1969	2	30545	28430	11180	11652	92693	92693	112715	114220	251813	254616
1969	3	22364	22364	12460	13233	101701	101701	117924	120249	230233	233034
1969	4	17455	17455	11510	12936	106718	106718	114743	114683	236552	239351
1969	5	24882	24882	9569	8611	108493	105514	135483	135422	321706	324498
1969	6	5490	9227	11555	15474	110561	108743	149018	149018	460283	459335
1969	7	5702	5703	1369	947	91823	85843	129163	139274	515163	514217
1969	8	11577	13758	271	1915	64689	57476	102540	124999	512261	509136
1969	9	8841	19065	2142	12196	53096	53101	91554	117093	507258	493913
1970	10	18546	18546	10793	9957	50431	48052	87452	112975	497063	483720
1970	11	17455	17455	15859	15396	63592	59583	85173	110681	484984	471643
1970	12	24322	21828	15080	19765	75455	75456	90263	107642	463164	452311
1970	1	26289	14763	12253	12931	84476	84476	99260	103675	439176	439847
1970	2	30545	26008	11065	11536	92458	92458	113438	114219	410498	415706
1970	3	22364	22364	12320	13092	101445	101445	119200	120801	390044	395250
1970	4	17455	17455	6127	7553	101508	101508	122319	121535	378930	384133
1970	5	31162	33246	10679	12701	103942	103942	136285	134597	483584	486695
1970	6	6820	9648	15649	16878	111841	109242	149438	149440	537058	537054
1970	7	5240	5240	2149	2251	95592	88834	135283	141300	537436	537436
1970	8	9058	9058	1472	2219	71577	61423	108917	129146	535340	535340
1970	9	8269	15003	1523	9175	61187	54791	99129	122823	532203	525470
1971	10	9076	17882	3309	13024	57871	57874	95440	119119	529293	513756
1971	11	12681	14326	10223	12726	64935	64935	93802	117467	521098	503917
1971	12	15882	17530	14176	16682	75941	75941	91417	115071	506145	487311
1971	1	25710	15343	12203	14268	84939	84939	99906	111747	482291	473818
1971	2	30545	18500	11038	12844	92916	92916	114128	114863	453590	457162
1971	3	22364	22364	12298	14274	101924	101924	119930	121485	432758	436329
1971	4	17455	17455	5862	8576	101720	101720	123122	122292	446743	450311
1971	5	11567	15396	10468	13297	103942	103942	136285	136285	521961	521696
1971	6	16743	16743	15768	16762	111570	108853	146197	145192	537013	537014
1971	7	8588	8588	1523	1614	93801	86925	127322	136693	537432	537432
1971	8	9052	9052	1472	1771	69348	59075	104845	124916	535336	535336
1971	9	7441	15200	1523	10182	60286	54792	95813	118494	533068	525882

TABLE A-2 Summary of WGFP Model Runs - WGFP EIS Alternative

WGFP Bestsm modeling results

(1) WGFP EIS run

(2) WGFP EIS w/ NISP Operations-Substitute water in-lieu of HT releases to Poudre; 40 cfs pipeline to HT

Month 10 = October

Units: Ac-ft

		Adams Tunnel		Unit 3 Pumping		EOM - Carter Lake		EOM - Horsetooth		EOM-Granby	
WY	Month	WGFP-EIS Run	WGFP-EIS w/ NISP Run	WGFP-EIS Run	WGFP-EIS w/ NISP Run	WGFP-EIS Run	WGFP-EIS w/ NISP Run	WGFP-EIS Run	WGFP-EIS w/ NISP Run	WGFP-EIS Run	WGFP-EIS w/ NISP Run
1972	10	15736	18546	7287	11022	57872	52810	88933	112860	521824	511829
1972	11	12533	17455	10550	16198	64935	63147	86417	110330	512513	497596
1972	12	23465	19820	14503	18468	75941	75942	90909	107763	490573	479297
1972	1	26438	15859	12534	14360	84939	84939	99906	104739	465913	465213
1972	2	30546	25100	11334	13008	92916	92916	114490	114865	437096	441842
1972	3	22364	22364	12628	14688	101924	101924	119336	120531	417919	422664
1972	4	17455	17455	10616	12884	106822	106822	116904	115715	415532	420274
1972	5	33818	33818	9042	11738	104105	104105	127401	125178	457766	462498
1972	6	32727	32727	9284	12576	97680	97680	135421	130848	536741	536733
1972	7	20258	20667	8262	12105	77632	77632	114368	117124	530398	529982
1972	8	13973	17418	5173	9016	58682	58682	88643	105982	523033	519175
1972	9	18099	21094	10077	13996	54792	54792	79384	98114	514404	507553
1973	10	18546	18546	11077	11970	55894	53511	72740	93631	503641	496791
1973	11	17455	17455	11913	15740	64490	63435	73739	91658	490507	483658
1973	12	33818	20746	14783	18341	75942	75942	88161	90908	458794	465017
1973	1	29736	28473	12369	14725	84939	84939	99906	99906	430783	438272
1973	2	30545	30545	11183	13388	92916	92916	113361	112022	401574	409062
1973	3	22364	22364	12463	14685	101924	101924	118546	115569	380426	387911
1973	4	17455	17455	11490	13588	106822	106206	114993	110253	370558	378040
1973	5	14541	19074	9274	9736	107145	104105	136290	135511	454594	457529
1973	6	20533	20533	12991	13425	111437	104684	149005	148331	536748	536858
1973	7	6722	6723	1523	2060	94186	83288	132100	138942	537084	537198
1973	8	10482	15279	1472	6991	68188	58678	104479	125109	537810	537923
1973	9	10251	22777	2217	15095	54787	54792	93009	117815	530201	517791
1974	10	18546	18546	11594	11801	54641	52264	86025	110839	513295	500887
1974	11	16384	17455	14099	15080	64936	61993	82950	107749	500803	487324
1974	12	28029	21497	14829	19318	75941	75942	90910	104626	473977	467026
1974	1	27627	16376	12865	14355	84939	84939	99906	100934	448423	452724
1974	2	30545	30061	11618	12957	92916	92916	113437	114866	418747	423531
1974	3	22364	22364	12957	14031	101924	101359	117078	119663	398376	403159
1974	4	17455	17455	6563	8974	101720	101720	117028	116664	400103	404883
1974	5	33301	33301	17018	15952	103351	100265	117194	118176	504108	508880
1974	6	29354	29354	11759	17229	97500	95823	121917	117909	537029	537025
1974	7	33818	33818	9383	14825	77153	77157	102807	109056	537431	537427
1974	8	33818	27624	13688	17422	58682	58682	80746	90005	509410	515597
1974	9	32727	30177	13395	16790	54792	54792	73932	77661	478406	487139
1975	10	18546	18546	11650	11857	56387	54003	62854	66578	461795	470527
1975	11	17455	17455	11975	12181	64879	61211	63660	67035	446527	455258
1975	12	33818	33818	14558	19771	75941	75942	78464	76540	413428	422164
1975	1	33818	33818	12534	14024	84939	84939	94808	91397	381556	390296
1975	2	30545	30545	11328	12666	92916	92916	109406	104659	352412	361151
1975	3	22364	22364	12628	14244	101924	101900	114227	107867	331614	340349
1975	4	17455	17455	5669	7539	101823	101823	116728	107970	322763	331494
1975	5	33379	33379	15089	17040	104106	103511	119353	111340	350774	359486

TABLE A-2 Summary of WGFP Model Runs - WGFP EIS Alternative

WGFP Bestsm modeling results

(1) WGFP EIS run

(2) WGFP EIS w/ NISP Operations-Substitute water in-lieu of HT releases to Poudre; 40 cfs pipeline to HT

Month 10 = October

Units: Ac-ft

		Adams Tunnel		Unit 3 Pumping		EOM - Carter Lake		EOM - Horsetooth		EOM-Granby	
WY	Month	WGFP-EIS Run	WGFP-EIS w/ NISP Run	WGFP-EIS Run	WGFP-EIS w/ NISP Run	WGFP-EIS Run	WGFP-EIS w/ NISP Run	WGFP-EIS Run	WGFP-EIS w/ NISP Run	WGFP-EIS Run	WGFP-EIS w/ NISP Run
1975	6	21025	21025	12334	11913	101128	96810	128711	121127	450396	459079
1975	7	10938	19636	479	6410	78582	76564	113957	113967	528618	528589
1975	8	17604	23071	7850	12764	57019	57021	88844	102345	523505	518014
1975	9	24381	26380	13037	15808	53068	53067	77242	93772	499913	492426
1976	10	18546	18546	12063	11736	55851	53468	63619	83750	482002	474517
1976	11	17455	17455	12097	16093	64662	64602	63866	80030	467069	459584
1976	12	33818	32961	14877	16045	75666	75666	76660	90265	433491	426860
1976	1	33818	29194	12915	13959	84686	84686	91751	99260	400904	398895
1976	2	30546	30546	11651	12543	92669	92669	105233	111399	371619	369610
1976	3	22364	22364	13050	14536	101726	101725	109063	113586	350346	348338
1976	4	17455	17455	11077	12111	106718	106286	104454	107022	344724	342717
1976	5	33818	33818	12325	14778	104131	104131	109903	109591	365743	363741
1976	6	32727	32727	13053	16087	97151	96881	107797	107779	401817	399821
1976	7	33818	33818	8919	13256	76812	76812	93339	102230	392886	390895
1976	8	33818	23019	10793	13941	58268	58268	80648	87796	367990	376792
1976	9	32727	32727	15470	18104	54660	54660	72054	76212	341020	349816
1977	10	18546	18546	11818	11399	55631	53248	59480	63632	324894	333688
1977	11	17455	17455	12505	11553	64330	60316	58735	62884	309994	318787
1977	12	33818	33818	15209	20043	75719	75719	72146	70652	276530	285328
1977	1	33818	33818	13088	14157	84939	84939	87475	84493	243467	252270
1977	2	30545	30545	11619	12537	92916	92916	101015	96697	213351	222154
1977	3	22364	22364	12958	14066	101924	101814	104697	98853	191500	200298
1977	4	17455	17455	11563	12152	106822	105875	99695	92312	186650	195440
1977	5	33818	33818	14303	16683	104821	103594	98546	91461	193610	202371
1977	6	32727	32727	15925	16313	97076	92938	89060	87688	213958	222683
1977	7	33818	33818	9004	17338	77632	77635	77140	78416	186057	194751
1977	8	33818	33818	8190	11402	58682	58682	70998	78489	160656	169327
1977	9	32727	32727	13274	16041	54792	54792	65418	69917	130399	139060
1978	10	18546	18546	11444	11333	57874	55800	60541	64725	117784	126441
1978	11	17455	17455	10221	12580	64935	64093	64005	65323	104951	113606
1978	12	29750	33818	14177	16234	75941	75942	75835	78721	78003	82597
1978	1	4072	8664	1812	1662	74548	73058	74438	81887	76219	76224
1978	2	2561	2565	1964	1964	73481	70658	72302	79746	76068	76068
1978	3	2558	2558	1906	1971	72219	67765	70050	77489	75947	75947
1978	4	9166	9166	6352	5814	73683	66862	66255	73683	92757	92757
1978	5	33818	33818	21003	21581	84120	75240	66638	73168	151600	151600
1978	6	25065	25065	18961	19540	90667	79200	70184	75593	323565	323566
1978	7	33818	33818	3145	18127	75813	75821	75507	74210	360275	360275
1978	8	33818	33818	4621	7204	57075	57075	75879	82545	336444	336444
1978	9	27360	20816	10664	13134	53887	53887	77255	77248	310726	317266
1979	10	17116	17819	10367	11859	57135	57135	71385	72560	294063	299899
1979	11	17455	17455	10732	11517	64661	64661	74234	76149	278769	284604
1979	12	33818	32632	14224	14996	75666	75666	89487	90266	247215	254240
1979	1	26098	26812	12253	12876	84686	84686	99260	99260	223412	229727

TABLE A-2 Summary of WGFP Model Runs - WGFP EIS Alternative

WGFP Bestsm modeling results

(1) WGFP EIS run

(2) WGFP EIS w/ NISP Operations-Substitute water in-lieu of HT releases to Poudre; 40 cfs pipeline to HT

Month 10 = October

Units: Ac-ft

		Adams Tunnel		Unit 3 Pumping		EOM - Carter Lake		EOM - Horsetooth		EOM-Granby	
WY	Month	WGFP-EIS Run	WGFP-EIS w/ NISP Run	WGFP-EIS Run	WGFP-EIS w/ NISP Run	WGFP-EIS Run	WGFP-EIS w/ NISP Run	WGFP-EIS Run	WGFP-EIS w/ NISP Run	WGFP-EIS Run	WGFP-EIS w/ NISP Run
1979	2	29890	30545	11064	11536	92669	92669	114221	113535	194875	200534
1979	3	22364	22364	12383	13440	101717	101717	120401	118076	173954	179610
1979	4	17455	17455	4091	6054	101720	101720	126509	121805	171506	177156
1979	5	18855	23300	12697	15152	103942	103942	136283	133026	263748	264943
1979	6	21941	23363	9996	9368	101500	97777	149017	147181	411176	410946
1979	7	5818	10319	1287	4929	79211	75808	128040	136264	466440	461715
1979	8	6593	10068	321	2736	60429	57072	110765	127431	478084	469893
1979	9	14771	21130	5511	10795	53099	53101	101817	120827	465474	450931
1980	10	17869	18546	10851	10566	56199	54492	96418	116002	447736	432521
1980	11	12802	16161	11130	14094	64451	64451	93797	113371	437040	418467
1980	12	15561	17209	14387	15159	75455	75455	90424	109988	422797	402569
1980	1	26882	15022	12419	13042	84476	84476	99260	105527	399198	390823
1980	2	30546	24849	11215	11687	92458	92458	112660	114219	371060	368382
1980	3	22364	22364	12484	13793	101445	101445	117805	120183	350809	348133
1980	4	17455	17455	6599	8879	101508	101508	122231	122224	345537	342862
1980	5	3953	5231	12924	13996	105650	103942	144940	144933	438815	434869
1980	6	3516	3516	15049	15987	110742	106566	156156	156156	537125	537130
1980	7	5425	5425	3284	3856	95361	87031	134562	146687	537423	537423
1980	8	9596	11419	1472	3798	68584	58676	109597	132837	532126	530304
1980	9	11200	23973	1523	14739	54938	54792	98842	125512	522468	507876
1981	10	18546	18546	9047	9553	53261	50734	87495	118258	503523	488934
1981	11	17455	17455	14491	14912	63952	59793	84419	115164	487768	473179
1981	12	27538	23702	15810	22018	75942	75942	90910	112038	459718	448960
1981	1	27627	16375	12865	14750	84939	84939	99906	108342	431628	432119
1981	2	30545	22616	11618	13293	92916	92916	113437	114864	401212	409632
1981	3	22364	22364	12957	14913	101924	101359	117078	117780	379396	387813
1981	4	17455	17455	11563	12415	106822	104795	112115	111897	372086	380498
1981	5	33818	33818	12301	17113	104821	104644	118267	113754	366738	375131
1981	6	32727	32727	11720	15610	97532	97532	118410	113239	393089	401457
1981	7	33818	33818	10764	15028	77632	77632	101654	106330	372725	381072
1981	8	33108	25034	11331	15490	58682	58682	87483	92646	343263	359661
1981	9	30034	27481	13620	17539	54792	54792	77663	77658	315199	334140
1982	10	18546	18546	10344	11180	55706	53323	67595	67590	300305	319240
1982	11	17455	17455	12383	13208	64935	61203	68894	68607	286681	305615
1982	12	33818	33818	14175	19873	75941	75942	84769	79122	254853	273798
1982	1	31419	33818	12203	14029	84939	84939	99907	95161	225303	241860
1982	2	29844	30545	11038	12797	92916	92916	114866	109483	196313	212167
1982	3	22364	22364	12298	14359	101924	101924	120883	113864	175436	191280
1982	4	17455	17455	4956	7224	101823	101823	125665	116271	166722	182554
1982	5	33818	33818	14220	17188	104106	104106	134318	122633	190084	205861
1982	6	30983	32727	5165	8878	96658	96658	149440	135995	282613	296586
1982	7	7479	11671	2108	6383	76802	76802	133773	125266	350030	359775
1982	8	7179	9106	1523	3750	59781	58272	116446	116523	362727	370531
1982	9	13865	18372	7754	12655	54507	54508	105962	109836	359202	362495

TABLE A-2 Summary of WGFP Model Runs - WGFP EIS Alternative

WGFP Bestsm modeling results

(1) WGFP EIS run

(2) WGFP EIS w/ NISP Operations-Substitute water in-lieu of HT releases to Poudre; 40 cfs pipeline to HT

Month 10 = October

Units: Ac-ft

		Adams Tunnel		Unit 3 Pumping		EOM - Carter Lake		EOM - Horsetooth		EOM-Granby	
WY	Month	WGFP-EIS Run	WGFP-EIS w/ NISP Run	WGFP-EIS Run	WGFP-EIS w/ NISP Run	WGFP-EIS Run	WGFP-EIS w/ NISP Run	WGFP-EIS Run	WGFP-EIS w/ NISP Run	WGFP-EIS Run	WGFP-EIS w/ NISP Run
1983	10	14564	16959	8849	11440	57607	57607	96964	106046	351754	352652
1983	11	12224	13872	10323	11878	64884	64884	95240	104316	344559	343809
1983	12	15269	16916	14064	15618	75889	75889	92776	101848	331927	329528
1983	1	23238	14733	12092	13581	84909	84909	99484	99482	310006	316114
1983	2	30545	29676	10922	12641	92892	92892	114811	114826	281250	288226
1983	3	22364	22364	12157	14218	101879	101879	121246	122082	262277	269250
1983	4	17455	17455	5110	7378	101823	101823	127717	126169	250604	257572
1983	5	8620	11615	9381	11928	104106	104106	142747	141201	317329	321286
1983	6	3081	3081	14770	16437	110672	108718	155738	155740	522742	526688
1983	7	4897	4845	14674	15258	111814	105697	149913	153520	537441	537437
1983	8	8244	8244	1523	1737	87815	78295	133513	143658	538153	538152
1983	9	8174	8174	1523	2475	78533	66069	123780	138343	535066	535066
1984	10	9146	9146	1523	2086	72950	58147	117941	133870	529188	529188
1984	11	3985	14243	1544	12172	71127	64935	115955	131875	529293	521113
1984	12	9936	17790	8164	16399	75941	75941	113211	129124	523741	507704
1984	1	14105	15602	12370	14280	84939	84939	109366	125272	511241	493702
1984	2	22565	14222	11189	13381	92916	92916	114863	121124	489797	480601
1984	3	22364	22364	12463	14522	101924	101924	120069	127146	469503	460311
1984	4	17455	17455	6334	8517	101823	101823	122027	126713	462501	453314
1984	5	14644	9935	14346	14780	108101	105122	136706	136703	537712	537724
1984	6	18921	18921	12913	14730	111900	106897	146492	145399	536993	536993
1984	7	10553	10553	1523	1614	90976	81822	121842	135494	537429	537428
1984	8	6949	11552	1472	6351	66644	58679	100150	121972	538153	538153
1984	9	10708	21686	3105	14534	54787	54792	90206	114778	535592	530842
1985	10	17877	18546	11760	13377	57874	56161	84330	109700	531170	525752
1985	11	12350	15714	10384	14598	64935	64935	82090	107445	525365	516584
1985	12	27914	18396	14339	16845	75941	75941	90910	105147	500192	500927
1985	1	25962	15712	12369	14726	84939	84939	99906	102450	476254	487241
1985	2	30385	26940	11183	13388	92916	92916	114866	114866	447126	461556
1985	3	22364	22364	12463	14969	101924	101924	120178	120997	426432	440856
1985	4	17455	17455	11743	12880	106718	105142	113649	116681	444694	459109
1985	5	30606	30606	7496	12077	103205	103324	124512	126099	536550	537726
1985	6	28629	28629	12239	16955	97362	97362	123273	128602	536996	536995
1985	7	16435	11622	2090	6799	77632	77632	114384	116663	537431	537431
1985	8	10987	14432	3255	7434	58610	58610	98589	107279	531625	528183
1985	9	15064	18058	7992	11924	54792	54792	90679	100319	518951	512516
1986	10	13573	15968	9296	12632	57874	57874	86572	96212	512238	503408
1986	11	12023	13670	10208	12701	64922	64922	84582	94216	507141	496665
1986	12	24235	17508	14188	16261	75941	75941	90910	92208	484855	481104
1986	1	25247	22967	12203	14023	84939	84939	99906	99905	460943	459470
1986	2	29877	28990	11038	12498	92916	92916	114866	114866	434941	434356
1986	3	22364	22364	12298	13853	101924	101924	120783	121603	416018	415432
1986	4	17455	17455	3972	6355	101720	101720	123000	121437	439478	438894
1986	5	32345	32345	11640	14619	103206	103206	126493	129053	537386	536802

TABLE A-2 Summary of WGFP Model Runs - WGFP EIS Alternative

WGFP Bestsm modeling results

(1) WGFP EIS run

(2) WGFP EIS w/ NISP Operations-Substitute water in-lieu of HT releases to Poudre; 40 cfs pipeline to HT

Month 10 = October

Units: Ac-ft

		Adams Tunnel		Unit 3 Pumping		EOM - Carter Lake		EOM - Horsetooth		EOM-Granby	
WY	Month	WGFP-EIS Run	WGFP-EIS w/ NISP Run	WGFP-EIS Run	WGFP-EIS w/ NISP Run	WGFP-EIS Run	WGFP-EIS w/ NISP Run	WGFP-EIS Run	WGFP-EIS w/ NISP Run	WGFP-EIS Run	WGFP-EIS w/ NISP Run
1986	6	13896	13896	16183	16858	106825	103101	134879	137435	536995	536996
1986	7	6664	6664	1472	1473	86251	78372	118285	127449	537431	537431
1986	8	8720	9551	1523	2350	69126	58682	102208	119104	538155	538155
1986	9	6672	13275	1523	8093	61608	54792	93843	112985	535593	531496
1987	10	10142	18546	5539	13902	57871	57057	89018	108151	532511	521732
1987	11	12279	14743	10386	12838	64935	64935	86781	105903	526088	512847
1987	12	22567	17768	14339	15978	75941	75941	90909	103609	504157	495711
1987	1	25843	15602	12369	13859	84939	84939	99906	100922	479218	481012
1987	2	30407	28497	11183	12521	92916	92916	114866	114866	449683	453387
1987	3	22364	22364	12463	14102	101924	101924	120268	121087	428980	432682
1987	4	17455	17455	10259	10259	105961	103578	115249	116915	433505	437205
1987	5	27988	27988	9918	15276	104105	104106	122043	125145	484911	488604
1987	6	27805	27805	8116	11841	96494	96494	131431	133527	518772	522456
1987	7	17681	16570	5121	9293	75867	75867	113954	120890	509178	513966
1987	8	9375	12820	3885	7833	58468	58468	98387	111017	503865	505206
1987	9	15154	18149	8962	11943	54793	54793	89561	103683	489286	487632
1988	10	16141	18536	10571	12955	57874	57874	83607	97727	473632	469583
1988	11	12108	13755	10334	11974	64722	64722	80622	94734	465371	459675
1988	12	28908	17605	14716	16356	75942	75942	90490	91712	437776	443383
1988	1	26457	24254	12535	14025	84939	84939	99485	99485	413084	420897
1988	2	30546	29966	11335	12673	92916	92916	114060	114446	383697	392089
1988	3	22364	22364	12629	14268	101924	101924	118819	120024	363445	371834
1988	4	17455	17455	4549	6933	101720	101720	121212	121303	373862	382246
1988	5	33818	33818	15347	17318	103942	102934	120473	122783	439455	447818
1988	6	32727	32727	8048	13353	95758	96332	129070	127684	537122	537116
1988	7	22125	18430	8160	12180	75955	76375	113957	113958	537429	537439
1988	8	17188	20596	6550	10756	56778	58210	92823	102715	523085	519688
1988	9	18972	21527	11051	14318	53013	54732	78148	94074	503758	497809
1989	10	18546	18546	10651	10326	55111	53957	70780	86705	485206	479258
1989	11	17455	17455	11747	15111	63055	63594	69943	82899	469919	463971
1989	12	33818	28275	15317	17983	75343	75894	83207	90489	436964	436558
1989	1	33818	29157	12998	14617	84716	84939	98335	99485	404353	408610
1989	2	30545	30545	11635	12958	92709	92916	112092	111678	375521	379778
1989	3	22364	22364	13164	14071	101924	101398	115335	113808	355458	359713
1989	4	17455	17455	11773	12007	106718	104094	108042	107559	361448	365700
1989	5	33818	33818	13545	17207	104191	102256	102187	105974	383266	387508
1989	6	32727	32727	10146	16071	96887	97052	104803	104848	404411	408642
1989	7	33818	33818	11956	16893	77138	77633	84984	95350	385046	389266
1989	8	33818	28409	3921	7347	58268	58682	81080	87071	358876	368493
1989	9	32727	32074	19064	21659	54765	54792	74891	77243	326516	336781
1990	10	18546	18546	10142	10116	50217	47834	61927	64276	307810	318072
1990	11	17455	17455	11875	12101	58958	55167	62295	64868	292531	302792
1990	12	33818	33818	20132	24250	75938	74637	72648	70660	259972	270239
1990	1	33818	33818	12208	14995	84939	84939	90177	85399	226698	236971

TABLE A-2 Summary of WGFP Model Runs - WGFP EIS Alternative

WGFP Bestsm modeling results

(1) WGFP EIS run

(2) WGFP EIS w/ NISP Operations-Substitute water in-lieu of HT releases to Poudre; 40 cfs pipeline to HT

Month 10 = October

Units: Ac-ft

		Adams Tunnel		Unit 3 Pumping		EOM - Carter Lake		EOM - Horsetooth		EOM-Granby	
WY	Month	WGFP-EIS Run	WGFP-EIS w/ NISP Run	WGFP-EIS Run	WGFP-EIS w/ NISP Run	WGFP-EIS Run	WGFP-EIS w/ NISP Run	WGFP-EIS Run	WGFP-EIS w/ NISP Run	WGFP-EIS Run	WGFP-EIS w/ NISP Run
1990	2	30545	30545	11039	12377	92916	92916	105840	99727	196906	207178
1990	3	22364	22364	12299	13939	101924	101924	113558	105809	176884	187151
1990	4	17455	17455	4977	7361	101823	101823	118821	108700	175263	185521
1990	5	33329	33329	12086	15065	104317	104317	126998	117800	192526	202750
1990	6	31162	31162	4871	8596	96850	96850	144327	131428	274964	285146
1990	7	7036	7336	1121	1822	81170	77299	129679	120782	294455	304306
1990	8	5856	11612	1523	7251	60237	58682	114920	112212	294263	298343
1990	9	12781	17334	6355	10886	54791	54792	106736	105826	285003	284528
1991	10	15576	17971	10508	12892	57874	57874	100762	99868	271860	268991
1991	11	12108	13755	10548	12188	64935	64935	97817	96924	263844	259327
1991	12	15958	17605	14504	16143	75941	75941	94835	93943	248456	242288
1991	1	22069	21992	12535	14025	84939	84939	99484	99484	227564	221470
1991	2	30545	30031	11329	12667	92916	92916	114074	114446	197345	191766
1991	3	22364	22364	12629	14268	101924	101924	118908	120099	176785	171209
1991	4	17455	17455	10946	13330	106822	106822	116504	115354	166410	160839
1991	5	33818	33818	9543	12523	104105	104105	125505	124159	217254	211702
1991	6	29306	29306	11504	15291	96351	96411	131112	127675	329122	323589
1991	7	29932	23041	8177	13074	76640	77426	113954	113959	323402	324764
1991	8	7469	9767	393	2609	58285	57857	93694	102615	326315	325379
1991	9	15864	20005	7588	12381	53886	54496	81354	94101	314655	309581
1992	10	18546	18546	13654	13551	54589	52703	75316	88769	296404	291331
1992	11	17455	17455	12803	15265	64030	62973	75382	85867	282113	277040
1992	12	33818	23786	15016	18101	75666	75832	89996	90488	249357	254316
1992	1	26206	25216	12419	14235	84686	84909	99260	99485	224206	230159
1992	2	30439	30546	11216	12557	92669	92892	114318	113214	194295	200140
1992	3	22364	22364	12710	14127	101879	101879	119828	116957	173786	179629
1992	4	17455	17455	10350	12734	106718	106718	118608	113607	176974	182812
1992	5	33818	33818	9423	12572	104001	104105	120731	121475	229305	235123
1992	6	32727	32727	6015	9698	96322	96383	134722	131879	268262	274057
1992	7	16353	19253	8048	12945	76640	77426	113949	119395	276488	279370
1992	8	11593	15039	4474	7688	57821	58251	96686	109306	272341	271774
1992	9	13702	16698	6179	9653	54171	54708	88257	101993	260064	256502
1993	10	13579	15977	9857	12482	57252	57874	83134	97349	246911	240953
1993	11	12700	14349	10615	11634	64712	64712	80501	94708	237217	229611
1993	12	27717	16893	14173	16121	75719	75802	90265	92284	210147	213364
1993	1	25246	22469	12201	14198	84716	84939	99260	99485	186029	192025
1993	2	29845	30545	11035	12377	92693	92916	114221	113895	157859	163154
1993	3	22364	22364	12407	13939	101810	101924	120460	118270	137282	142573
1993	4	17455	17455	5153	7423	101823	101823	125656	121085	128584	133870
1993	5	33818	33818	12998	16039	103942	104003	133194	128730	216536	221801
1993	6	31054	32113	4836	8501	96400	96400	149021	142417	352351	356540
1993	7	7958	12151	2350	6521	75809	75809	125576	131417	409532	409523
1993	8	13802	17246	4651	8078	57072	57072	111241	122641	410897	407446
1993	9	12779	15774	5873	8853	53101	53101	103049	116090	403762	397320

TABLE A-2 Summary of WGFP Model Runs - WGFP EIS Alternative

WGFP Bestsm modeling results

(1) WGFP EIS run

(2) WGFP EIS w/ NISP Operations-Substitute water in-lieu of HT releases to Poudre; 40 cfs pipeline to HT

Month 10 = October

Units: Ac-ft

		Adams Tunnel		Unit 3 Pumping		EOM - Carter Lake		EOM - Horsetooth		EOM-Granby	
WY	Month	WGFP-EIS Run	WGFP-EIS w/ NISP Run	WGFP-EIS Run	WGFP-EIS w/ NISP Run	WGFP-EIS Run	WGFP-EIS w/ NISP Run	WGFP-EIS Run	WGFP-EIS w/ NISP Run	WGFP-EIS Run	WGFP-EIS w/ NISP Run
1994	10	17324	18546	12000	13216	56199	55032	94636	108608	392265	384602
1994	11	13100	15918	11621	14913	64451	64451	90906	104870	382497	372017
1994	12	19453	17967	14878	16517	75455	75455	90262	101102	364336	355338
1994	1	27703	15834	12915	14405	84476	84476	99260	99257	338215	341084
1994	2	30545	30545	11645	12983	92458	92458	112746	113627	309230	312099
1994	3	22364	22364	12978	14617	101445	101445	116375	116739	289267	292134
1994	4	17455	17455	10624	13008	106507	106507	112992	111093	296957	299823
1994	5	33818	33818	10956	13936	103941	103941	114259	114111	364179	367038
1994	6	32727	32727	13354	16530	96093	95544	108481	112320	411312	414162
1994	7	33818	33818	14371	17910	76640	75461	83529	99264	383135	385978
1994	8	33818	33552	10103	14706	57483	57483	73624	87066	352781	355884
1994	9	32727	24629	9190	12169	53101	53101	74855	77243	321002	332200
1995	10	18546	18546	13909	13909	53688	51305	68227	70612	304778	315974
1995	11	17455	17455	12784	13273	63438	59423	68247	70631	290304	301498
1995	12	33818	33818	15561	21204	75455	75456	81436	78177	257617	268818
1995	1	33818	33818	12584	14074	84476	84476	96412	91666	225090	236298
1995	2	30545	30545	11355	12693	92458	92458	109026	102946	196209	207415
1995	3	22364	22364	12649	14288	101445	101445	113575	105859	176352	187552
1995	4	17455	17455	12642	13972	106507	105453	108769	99733	166951	178142
1995	5	32438	32438	8284	12315	103941	103941	133628	120575	185644	196796
1995	6	2850	2850	15874	16610	109168	105445	155748	142901	374689	385800
1995	7	6185	6185	16379	16227	106563	98534	150138	140306	521852	532938
1995	8	11168	10580	271	0	73846	61955	115192	123720	537096	538166
1995	9	10633	22682	64	12519	55422	53047	97218	114041	530797	519820
1996	10	15275	18546	11299	14582	56148	54680	92582	109387	519637	505391
1996	11	11882	15030	10967	14466	64400	64307	89948	106743	511908	494516
1996	12	18256	16926	14223	15993	75404	75442	90262	104087	494648	478580
1996	1	25319	14764	12253	13756	84425	84476	99260	101088	472637	467119
1996	2	29904	29411	11081	12409	92418	92458	114221	114220	444847	439822
1996	3	22364	22364	12359	13959	101445	101445	120195	118556	422881	417858
1996	4	17455	17455	5198	7632	101457	101508	125611	121591	435404	430384
1996	5	33818	33818	12963	15924	103206	103237	128857	125494	537642	532631
1996	6	29013	29013	4782	9152	97317	97317	144583	138534	536995	537001
1996	7	7058	7058	1523	1523	83579	79410	124993	128262	537431	537431
1996	8	8609	16233	1779	9365	58678	58681	109625	119811	533671	526052
1996	9	12455	15447	6967	9945	54792	54792	100412	113440	527340	516733

TABLE A-3 Summary of WGFP Model Runs - WGFP EIS

WGFP Bestsm modeling results

(1) WGFP EIS run

(2) WGFP EIS w/ NISP Operations-Substitute water in-lieu

Month 10 = October

Units: Ac-ft

		C-BT Demands		East Slope Yield	
WY	Month	WGFP-EIS Run	WGFP-EIS w/ NISP Run	WGFP-EIS Run	WGFP-EIS w/ NISP Run
1950	10	19507	19507	0	0
1950	11	5199	5199	0	0
1950	12	5175	5175	0	0
1950	1	5428	5427	0	0
1950	2	4854	4854	0	0
1950	3	5506	5506	0	0
1950	4	10874	10874	0	0
1950	5	24686	24686	0	0
1950	6	26895	26895	0	0
1950	7	52792	52793	0	0
1950	8	52571	52571	0	0
1950	9	32852	32851	0	0
1951	10	17191	17191	0	0
1951	11	4620	4620	0	0
1951	12	4599	4599	0	0
1951	1	4819	4819	0	0
1951	2	4310	4310	0	0
1951	3	4892	4892	0	0
1951	4	9613	9613	0	0
1951	5	21746	21746	0	0
1951	6	23712	23712	0	0
1951	7	46402	46402	0	0
1951	8	46191	46191	0	0
1951	9	28903	28903	0	0
1952	10	12912	12912	0	0
1952	11	4127	4127	0	0
1952	12	4249	4249	0	0
1952	1	5080	5080	0	0
1952	2	5121	5122	0	0
1952	3	4321	4321	0	0
1952	4	10932	10933	0	0
1952	5	14640	14640	17429	17429
1952	6	14913	14913	14000	14000
1952	7	33392	33392	0	0
1952	8	50902	50902	0	0
1952	9	27071	27071	0	0
1953	10	18026	18026	0	0
1953	11	5134	5134	0	0
1953	12	5096	5096	0	0
1953	1	5423	5423	0	0
1953	2	4854	4854	0	0
1953	3	5506	5506	0	0
1953	4	10570	10570	0	0
1953	5	22901	22900	0	0

TABLE A-3 Summary of WGFP Model Runs - WGFP EIS

WGFP Bestsm modeling results

(1) WGFP EIS run

(2) WGFP EIS w/ NISP Operations-Substitute water in-lieu

Month 10 = October

Units: Ac-ft

		C-BT Demands		East Slope Yield	
WY	Month	WGFP-EIS Run	WGFP-EIS w/ NISP Run	WGFP-EIS Run	WGFP-EIS w/ NISP Run
1953	6	26484	26484	0	0
1953	7	48173	48173	0	0
1953	8	45315	45316	0	0
1953	9	31383	31383	0	0
1954	10	23123	23122	0	0
1954	11	6275	6275	0	0
1954	12	6228	6228	0	0
1954	1	6638	6638	0	0
1954	2	5942	5942	0	0
1954	3	6732	6732	0	0
1954	4	13280	13280	0	0
1954	5	32925	32924	0	0
1954	6	36037	36036	0	0
1954	7	65315	65316	0	0
1954	8	64175	64175	0	0
1954	9	39061	39061	0	0
1955	10	20670	20670	0	0
1955	11	6275	6275	0	0
1955	12	6228	6228	0	0
1955	1	6638	6638	0	0
1955	2	5942	5942	0	0
1955	3	6732	6732	0	0
1955	4	13330	13331	0	0
1955	5	43384	43384	0	0
1955	6	32656	32655	0	0
1955	7	64218	64218	0	0
1955	8	58520	58520	0	0
1955	9	41653	41653	0	0
1956	10	16674	16674	0	0
1956	11	4490	4490	0	0
1956	12	4530	4530	0	0
1956	1	4815	4815	0	0
1956	2	4310	4310	0	0
1956	3	4868	4868	0	0
1956	4	8871	8870	0	0
1956	5	20462	20462	0	0
1956	6	23120	23119	0	0
1956	7	50516	50516	0	0
1956	8	41308	41308	0	0
1956	9	34071	34071	0	0
1957	10	17547	17546	0	0
1957	11	4016	4016	0	0
1957	12	4189	4189	0	0
1957	1	5076	5076	0	0

TABLE A-3 Summary of WGFP Model Runs - WGFP EIS

WGFP Bestsm modeling results

(1) WGFP EIS run

(2) WGFP EIS w/ NISP Operations-Substitute water in-lieu

Month 10 = October

Units: Ac-ft

		C-BT Demands		East Slope Yield	
WY	Month	WGFP-EIS Run	WGFP-EIS w/ NISP Run	WGFP-EIS Run	WGFP-EIS w/ NISP Run
1957	2	5121	5122	0	0
1957	3	4300	4300	0	0
1957	4	10407	10407	0	0
1957	5	11590	11590	20221	20221
1957	6	12935	12935	31155	31155
1957	7	27098	27098	3619	3619
1957	8	49468	49468	0	0
1957	9	36783	36782	0	0
1958	10	20414	20414	0	0
1958	11	6640	6640	0	0
1958	12	6888	6888	0	0
1958	1	8239	8239	0	0
1958	2	8324	8324	0	0
1958	3	7007	7007	0	0
1958	4	13746	13746	0	0
1958	5	19570	19570	36991	36991
1958	6	28346	28346	11746	11746
1958	7	60857	60857	0	0
1958	8	73289	73289	0	0
1958	9	52488	52488	0	0
1959	10	20654	20654	0	0
1959	11	5134	5134	0	0
1959	12	5096	5096	0	0
1959	1	5423	5423	0	0
1959	2	4854	4854	0	0
1959	3	5506	5506	0	0
1959	4	10190	10190	0	0
1959	5	20396	20396	6907	6907
1959	6	25859	25859	2059	2059
1959	7	50926	50926	0	0
1959	8	56660	56660	0	0
1959	9	36488	36488	0	0
1960	10	17775	17775	0	0
1960	11	4563	4563	0	0
1960	12	4530	4530	0	0
1960	1	4815	4815	0	0
1960	2	4310	4310	0	0
1960	3	4892	4892	0	0
1960	4	9015	9015	0	0
1960	5	18135	18135	639	639
1960	6	21837	21837	1207	1207
1960	7	43240	43241	0	0
1960	8	52859	52859	0	0
1960	9	31987	31987	0	0

TABLE A-3 Summary of WGFP Model Runs - WGFP EIS

WGFP Bestsm modeling results

(1) WGFP EIS run

(2) WGFP EIS w/ NISP Operations-Substitute water in-lieu

Month 10 = October

Units: Ac-ft

		C-BT Demands		East Slope Yield	
WY	Month	WGFP-EIS Run	WGFP-EIS w/ NISP Run	WGFP-EIS Run	WGFP-EIS w/ NISP Run
1961	10	13446	13445	0	0
1961	11	4016	4016	0	0
1961	12	4189	4189	0	0
1961	1	5076	5076	0	0
1961	2	5121	5122	0	0
1961	3	4300	4300	0	0
1961	4	10407	10407	0	0
1961	5	11590	11590	6432	6432
1961	6	12839	12839	34149	34149
1961	7	33657	33656	0	0
1961	8	54307	54307	0	0
1961	9	29370	29369	0	0
1962	10	13791	13791	0	0
1962	11	4770	4770	0	0
1962	12	4813	4813	0	0
1962	1	5119	5119	0	0
1962	2	4582	4582	0	0
1962	3	5173	5173	0	0
1962	4	9448	9448	0	0
1962	5	22780	22780	0	0
1962	6	22757	22758	1733	1733
1962	7	55357	55357	0	0
1962	8	50657	50657	0	0
1962	9	32930	32930	0	0
1963	10	22542	22542	0	0
1963	11	6171	6171	0	0
1963	12	6228	6228	0	0
1963	1	6638	6638	0	0
1963	2	5942	5942	0	0
1963	3	6698	6698	0	0
1963	4	14611	14612	0	0
1963	5	50040	50040	0	0
1963	6	34739	34739	0	0
1963	7	62271	62271	0	0
1963	8	53104	53104	0	0
1963	9	37132	37132	0	0
1964	10	24381	24382	0	0
1964	11	5704	5705	0	0
1964	12	5662	5662	0	0
1964	1	6031	6031	0	0
1964	2	5398	5398	0	0
1964	3	6119	6119	0	0
1964	4	11327	11327	0	0
1964	5	36498	36498	0	0

TABLE A-3 Summary of WGFP Model Runs - WGFP EIS

WGFP Bestsm modeling results

(1) WGFP EIS run

(2) WGFP EIS w/ NISP Operations-Substitute water in-lieu

Month 10 = October

Units: Ac-ft

		C-BT Demands		East Slope Yield	
WY	Month	WGFP-EIS Run	WGFP-EIS w/ NISP Run	WGFP-EIS Run	WGFP-EIS w/ NISP Run
1964	6	29212	29212	0	0
1964	7	58609	58610	0	0
1964	8	54197	54197	0	0
1964	9	33738	33738	0	0
1965	10	14334	14334	0	0
1965	11	3993	3992	0	0
1965	12	3964	3963	0	0
1965	1	4207	4207	0	0
1965	2	3766	3766	0	0
1965	3	4279	4279	0	0
1965	4	8023	8023	0	0
1965	5	23564	23563	0	0
1965	6	19008	19008	16191	16191
1965	7	30393	30393	1177	1177
1965	8	44010	44010	0	0
1965	9	29154	29154	0	0
1966	10	19221	19221	0	0
1966	11	6171	6171	0	0
1966	12	6228	6228	0	0
1966	1	6638	6638	0	0
1966	2	5942	5942	0	0
1966	3	6698	6698	0	0
1966	4	12287	12287	0	0
1966	5	33983	33983	0	0
1966	6	42174	42174	0	0
1966	7	70799	70799	0	0
1966	8	63640	63641	0	0
1966	9	32265	32265	0	0
1967	10	18381	18381	0	0
1967	11	4490	4490	0	0
1967	12	4530	4530	0	0
1967	1	4815	4815	0	0
1967	2	4310	4310	0	0
1967	3	4868	4868	0	0
1967	4	8979	8979	0	0
1967	5	17757	17757	0	0
1967	6	22255	22255	4506	4506
1967	7	31146	31147	14256	14256
1967	8	61353	61353	0	0
1967	9	34895	34895	0	0
1968	10	17156	17155	0	0
1968	11	3930	3930	0	0
1968	12	3964	3963	0	0
1968	1	4207	4207	0	0

TABLE A-3 Summary of WGFP Model Runs - WGFP EIS

WGFP Bestsm modeling results

(1) WGFP EIS run

(2) WGFP EIS w/ NISP Operations-Substitute water in-lieu

Month 10 = October

Units: Ac-ft

		C-BT Demands		East Slope Yield	
WY	Month	WGFP-EIS Run	WGFP-EIS w/ NISP Run	WGFP-EIS Run	WGFP-EIS w/ NISP Run
1968	2	3766	3766	0	0
1968	3	4258	4258	0	0
1968	4	7686	7686	0	0
1968	5	15876	15876	58	57
1968	6	18936	18936	2191	2191
1968	7	44219	44219	0	0
1968	8	36244	36244	0	0
1968	9	28702	28702	0	0
1969	10	16248	16248	0	0
1969	11	4600	4600	0	0
1969	12	4789	4789	0	0
1969	1	5825	5825	0	0
1969	2	5889	5889	0	0
1969	3	4914	4914	0	0
1969	4	12452	12452	0	0
1969	5	12492	12492	13557	13557
1969	6	15294	15293	30055	30055
1969	7	40153	40153	840	839
1969	8	68069	68068	0	0
1969	9	27307	27307	0	0
1970	10	15968	15968	0	0
1970	11	4079	4078	0	0
1970	12	4189	4189	0	0
1970	1	5076	5076	0	0
1970	2	5121	5122	0	0
1970	3	4321	4321	0	0
1970	4	10891	10891	0	0
1970	5	10888	10888	572	572
1970	6	12240	12240	29515	29515
1970	7	33029	33029	626	625
1970	8	57891	57891	0	0
1970	9	24836	24836	0	0
1971	10	12078	12077	0	0
1971	11	4079	4078	0	0
1971	12	4189	4189	0	0
1971	1	5076	5076	0	0
1971	2	5121	5122	0	0
1971	3	4321	4321	0	0
1971	4	10653	10653	0	0
1971	5	10922	10922	19721	19721
1971	6	12491	12491	16610	16609
1971	7	41940	41939	0	0
1971	8	55862	55862	0	0
1971	9	21964	21964	0	0

TABLE A-3 Summary of WGFP Model Runs - WGFP EIS

WGFP Bestsm modeling results

(1) WGFP EIS run

(2) WGFP EIS w/ NISP Operations-Substitute water in-lieu

Month 10 = October

Units: Ac-ft

		C-BT Demands		East Slope Yield	
WY	Month	WGFP-EIS Run	WGFP-EIS w/ NISP Run	WGFP-EIS Run	WGFP-EIS w/ NISP Run
1972	10	19354	19354	0	0
1972	11	5050	5050	0	0
1972	12	5096	5096	0	0
1972	1	5423	5423	0	0
1972	2	4854	4854	0	0
1972	3	5478	5478	0	0
1972	4	10376	10376	0	0
1972	5	21370	21370	0	0
1972	6	27197	27197	0	0
1972	7	60871	60871	0	0
1972	8	54682	54682	0	0
1972	9	27619	27620	0	0
1973	10	19305	19305	0	0
1973	11	4673	4673	0	0
1973	12	4789	4789	0	0
1973	1	5825	5825	0	0
1973	2	5889	5889	0	0
1973	3	4938	4938	0	0
1973	4	12396	12396	0	0
1973	5	12549	12548	24477	24477
1973	6	14266	14266	14243	14243
1973	7	37620	37620	0	0
1973	8	64300	64300	0	0
1973	9	31481	31481	0	0
1974	10	19725	19725	0	0
1974	11	6275	6275	0	0
1974	12	6228	6228	0	0
1974	1	6638	6638	0	0
1974	2	5942	5942	0	0
1974	3	6732	6732	0	0
1974	4	12757	12757	0	0
1974	5	27803	27802	1764	1764
1974	6	30711	30711	3373	3373
1974	7	72096	72097	0	0
1974	8	71407	71407	0	0
1974	9	39727	39728	0	0
1975	10	22769	22770	0	0
1975	11	5159	5159	0	0
1975	12	5096	5096	0	0
1975	1	5423	5423	0	0
1975	2	4854	4854	0	0
1975	3	5506	5506	0	0
1975	4	10446	10446	0	0
1975	5	24456	24456	530	530

TABLE A-3 Summary of WGFP Model Runs - WGFP EIS

WGFP Bestsm modeling results

(1) WGFP EIS run

(2) WGFP EIS w/ NISP Operations-Substitute water in-lieu

Month 10 = October

Units: Ac-ft

		C-BT Demands		East Slope Yield	
WY	Month	WGFP-EIS Run	WGFP-EIS w/ NISP Run	WGFP-EIS Run	WGFP-EIS w/ NISP Run
1975	6	24333	24333	15077	15077
1975	7	44061	44061	0	0
1975	8	59547	59547	0	0
1975	9	35721	35721	0	0
1976	10	25728	25728	0	0
1976	11	6275	6275	0	0
1976	12	7095	7095	0	0
1976	1	6638	6638	0	0
1976	2	5942	5942	0	0
1976	3	6732	6732	0	0
1976	4	12950	12950	0	0
1976	5	26365	26365	0	0
1976	6	37511	37511	0	0
1976	7	67692	67693	0	0
1976	8	61595	61595	0	0
1976	9	41504	41504	0	0
1977	10	24689	24688	0	0
1977	11	6171	6171	0	0
1977	12	6228	6228	0	0
1977	1	6638	6638	0	0
1977	2	5942	5942	0	0
1977	3	6698	6698	0	0
1977	4	12728	12728	0	0
1977	5	33104	33104	0	0
1977	6	45351	45351	0	0
1977	7	64973	64973	0	0
1977	8	55013	55013	0	0
1977	9	38513	38513	0	0
1978	10	15107	15107	0	0
1978	11	3930	3930	0	0
1978	12	3964	3963	0	0
1978	1	4207	4207	0	0
1978	2	3766	3766	0	0
1978	3	4258	4258	0	0
1978	4	8008	8008	0	0
1978	5	15500	15500	0	0
1978	6	18182	18182	7813	7813
1978	7	38470	38470	0	0
1978	8	47539	47539	0	0
1978	9	25763	25762	0	0
1979	10	16128	16128	0	0
1979	11	4031	4030	0	0
1979	12	4513	4513	0	0
1979	1	4207	4207	0	0

TABLE A-3 Summary of WGFP Model Runs - WGFP EIS

WGFP Bestsm modeling results

(1) WGFP EIS run

(2) WGFP EIS w/ NISP Operations-Substitute water in-lieu

Month 10 = October

Units: Ac-ft

		C-BT Demands		East Slope Yield	
WY	Month	WGFP-EIS Run	WGFP-EIS w/ NISP Run	WGFP-EIS Run	WGFP-EIS w/ NISP Run
1979	2	3766	3766	0	0
1979	3	4279	4279	0	0
1979	4	7895	7895	0	0
1979	5	15688	15688	13296	13296
1979	6	18326	18326	11336	11336
1979	7	44848	44848	758	758
1979	8	38077	38077	0	0
1979	9	26871	26870	0	0
1980	10	16388	16388	0	0
1980	11	4673	4673	0	0
1980	12	4789	4789	0	0
1980	1	5825	5825	0	0
1980	2	5889	5889	0	0
1980	3	4938	4938	0	0
1980	4	12479	12478	0	0
1980	5	13637	13637	35657	35657
1980	6	15216	15215	33549	33549
1980	7	41998	41998	2327	2327
1980	8	60101	60101	0	0
1980	9	31956	31956	0	0
1981	10	26427	26427	0	0
1981	11	6949	6949	0	0
1981	12	6228	6228	0	0
1981	1	6638	6638	0	0
1981	2	5942	5942	0	0
1981	3	6732	6732	0	0
1981	4	12673	12673	0	0
1981	5	25829	25829	0	0
1981	6	35992	35992	0	0
1981	7	70228	70228	0	0
1981	8	62378	62378	0	0
1981	9	40027	40027	0	0
1982	10	22150	22150	0	0
1982	11	3930	3930	0	0
1982	12	3964	3963	0	0
1982	1	4207	4207	0	0
1982	2	3766	3766	0	0
1982	3	4258	4258	0	0
1982	4	8391	8391	0	0
1982	5	18289	18288	0	0
1982	6	18432	18432	0	0
1982	7	38487	38486	0	0
1982	8	37160	37160	0	0
1982	9	25635	25634	0	0

TABLE A-3 Summary of WGFP Model Runs - WGFP EIS

WGFP Bestsm modeling results

(1) WGFP EIS run

(2) WGFP EIS w/ NISP Operations-Substitute water in-lieu

Month 10 = October

Units: Ac-ft

		C-BT Demands		East Slope Yield	
WY	Month	WGFP-EIS Run	WGFP-EIS w/ NISP Run	WGFP-EIS Run	WGFP-EIS w/ NISP Run
1983	10	16669	16670	0	0
1983	11	3431	3431	0	0
1983	12	3589	3589	0	0
1983	1	4327	4327	0	0
1983	2	4354	4354	0	0
1983	3	3687	3687	0	0
1983	4	9030	9030	0	0
1983	5	9859	9859	22148	22148
1983	6	10959	10959	35216	35216
1983	7	25142	25141	18225	18225
1983	8	44500	44500	0	0
1983	9	23428	23428	0	0
1984	10	17008	17008	0	0
1984	11	4600	4600	0	0
1984	12	4795	4795	0	0
1984	1	5853	5853	0	0
1984	2	5891	5891	0	0
1984	3	4917	4917	0	0
1984	4	12081	12081	0	0
1984	5	13340	13340	22130	22130
1984	6	15856	15856	14049	14049
1984	7	52758	52758	0	0
1984	8	51728	51728	0	0
1984	9	28897	28897	0	0
1985	10	15408	15407	0	0
1985	11	4569	4569	0	0
1985	12	5166	5166	0	0
1985	1	4935	4935	0	0
1985	2	4315	4315	0	0
1985	3	4988	4988	0	0
1985	4	14546	14546	0	0
1985	5	20475	20474	3279	3279
1985	6	36953	36953	4099	4099
1985	7	41825	41826	0	0
1985	8	41820	41820	0	0
1985	9	23185	23185	0	0
1986	10	11161	11161	0	0
1986	11	3965	3965	0	0
1986	12	3970	3969	0	0
1986	1	4207	4207	0	0
1986	2	3798	3798	0	0
1986	3	4358	4358	0	0
1986	4	11849	11849	0	0
1986	5	24246	24246	2458	2458

TABLE A-3 Summary of WGFP Model Runs - WGFP EIS

WGFP Bestsm modeling results

(1) WGFP EIS run

(2) WGFP EIS w/ NISP Operations-Substitute water in-lieu

Month 10 = October

Units: Ac-ft

		C-BT Demands		East Slope Yield	
WY	Month	WGFP-EIS Run	WGFP-EIS w/ NISP Run	WGFP-EIS Run	WGFP-EIS w/ NISP Run
1986	6	19762	19762	20613	20613
1986	7	44202	44202	0	0
1986	8	38048	38048	0	0
1986	9	18962	18962	0	0
1987	10	12817	12816	0	0
1987	11	4490	4490	0	0
1987	12	4538	4538	0	0
1987	1	4815	4815	0	0
1987	2	4337	4337	0	0
1987	3	4898	4898	0	0
1987	4	13829	13828	0	0
1987	5	27517	27517	9487	9487
1987	6	26486	26485	5406	5406
1987	7	50824	50825	0	0
1987	8	39232	39231	0	0
1987	9	24251	24250	0	0
1988	10	15550	15550	0	0
1988	11	5100	5100	0	0
1988	12	5138	5138	0	0
1988	1	5444	5444	0	0
1988	2	4863	4863	0	0
1988	3	5566	5566	0	0
1988	4	11655	11655	0	0
1988	5	27742	27742	0	0
1988	6	26585	26584	0	0
1988	7	53032	53031	0	0
1988	8	53285	53285	0	0
1988	9	33410	33410	0	0
1989	10	20892	20892	0	0
1989	11	6516	6516	0	0
1989	12	6301	6301	0	0
1989	1	6670	6670	0	0
1989	2	5943	5943	0	0
1989	3	7131	7131	0	0
1989	4	15325	15325	0	0
1989	5	37502	37502	0	0
1989	6	32869	32869	0	0
1989	7	75161	75162	0	0
1989	8	52694	52694	0	0
1989	9	39023	39023	0	0
1990	10	28170	28170	0	0
1990	11	4921	4921	0	0
1990	12	3978	3977	0	0
1990	1	4210	4210	0	0

TABLE A-3 Summary of WGFP Model Runs - WGFP EIS

WGFP Bestsm modeling results

(1) WGFP EIS run

(2) WGFP EIS w/ NISP Operations-Substitute water in-lieu

Month 10 = October

Units: Ac-ft

		C-BT Demands		East Slope Yield	
WY	Month	WGFP-EIS Run	WGFP-EIS w/ NISP Run	WGFP-EIS Run	WGFP-EIS w/ NISP Run
1990	2	3767	3767	0	0
1990	3	4261	4261	0	0
1990	4	7917	7917	0	0
1990	5	18833	18833	489	489
1990	6	18319	18319	1566	1566
1990	7	33873	33873	0	0
1990	8	37607	37607	0	0
1990	9	22773	22773	0	0
1991	10	14988	14988	0	0
1991	11	5050	5050	0	0
1991	12	5096	5096	0	0
1991	1	5423	5423	0	0
1991	2	4858	4858	0	0
1991	3	5491	5491	0	0
1991	4	11336	11336	0	0
1991	5	22938	22938	0	0
1991	6	29788	29787	3421	3421
1991	7	68931	68931	0	0
1991	8	41676	41676	0	0
1991	9	29163	29162	0	0
1992	10	14397	14396	0	0
1992	11	4958	4957	0	0
1992	12	4552	4552	0	0
1992	1	4840	4840	0	0
1992	2	4314	4314	0	0
1992	3	4877	4877	0	0
1992	4	9091	9091	0	0
1992	5	29674	29673	0	0
1992	6	21354	21355	0	0
1992	7	53498	53498	0	0
1992	8	43890	43890	0	0
1992	9	22426	22426	0	0
1993	10	11665	11665	0	0
1993	11	5060	5060	0	0
1993	12	3999	3999	0	0
1993	1	4208	4208	0	0
1993	2	3766	3766	0	0
1993	3	4261	4261	0	0
1993	4	7677	7677	0	0
1993	5	19459	19459	0	0
1993	6	18424	18424	615	615
1993	7	46992	46992	0	0
1993	8	42269	42269	0	0
1993	9	20820	20820	0	0

TABLE A-3 Summary of WGFP Model Runs - WGFP EIS

WGFP Bestsm modeling results

(1) WGFP EIS run

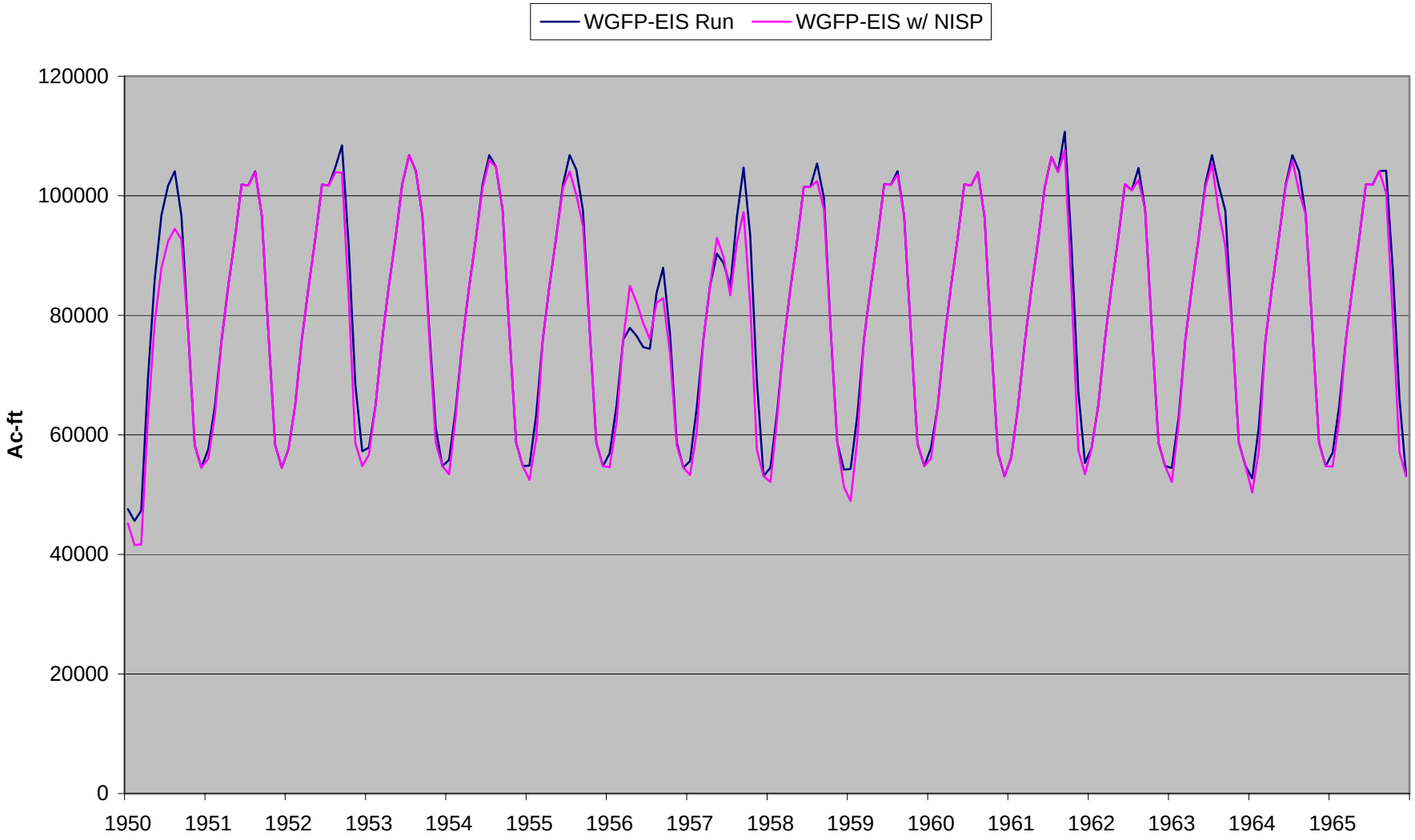
(2) WGFP EIS w/ NISP Operations-Substitute water in-lieu

Month 10 = October

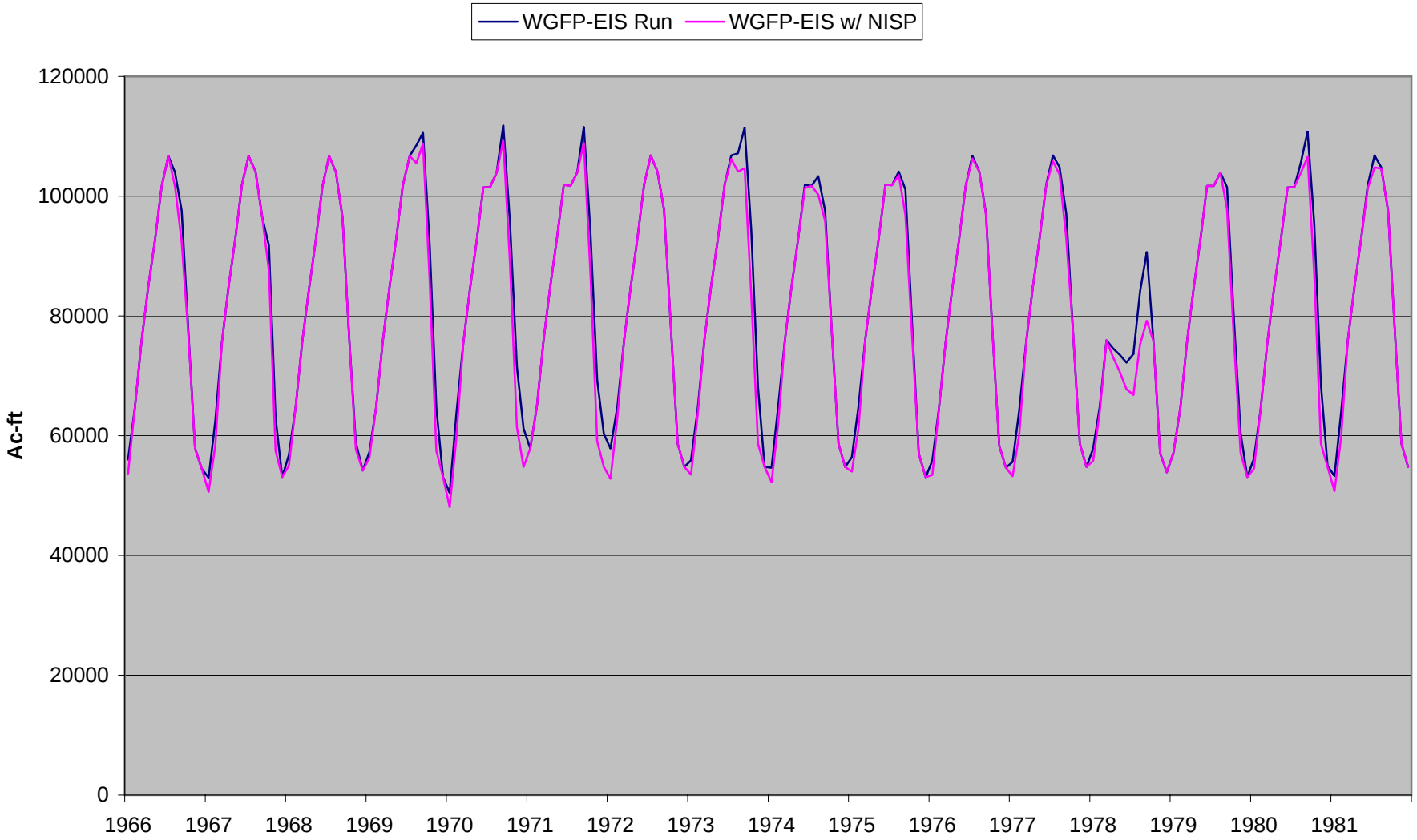
Units: Ac-ft

		C-BT Demands		East Slope Yield	
WY	Month	WGFP-EIS Run	WGFP-EIS w/ NISP Run	WGFP-EIS Run	WGFP-EIS w/ NISP Run
1994	10	18847	18847	0	0
1994	11	6376	6376	0	0
1994	12	6229	6229	0	0
1994	1	6642	6642	0	0
1994	2	5943	5943	0	0
1994	3	6705	6705	0	0
1994	4	12395	12396	0	0
1994	5	30559	30559	0	0
1994	6	40947	40947	0	0
1994	7	80429	80429	0	0
1994	8	58866	58866	0	0
1994	9	31730	31730	0	0
1995	10	14975	14975	0	0
1995	11	5185	5185	0	0
1995	12	5391	5391	0	0
1995	1	6588	6588	0	0
1995	2	6686	6686	0	0
1995	3	5535	5535	0	0
1995	4	13606	13606	0	0
1995	5	15085	15085	6324	6324
1995	6	16659	16659	45401	45401
1995	7	32691	32691	24146	24146
1995	8	79501	79501	0	0
1995	9	42703	42703	0	0
1996	10	11371	11371	0	0
1996	11	3959	3959	0	0
1996	12	3966	3965	0	0
1996	1	4208	4208	0	0
1996	2	3769	3769	0	0
1996	3	4260	4260	0	0
1996	4	7677	7677	0	0
1996	5	23616	23616	0	0
1996	6	19956	19956	3714	3714
1996	7	37192	37193	0	0
1996	8	46743	46742	0	0
1996	9	21983	21983	0	0

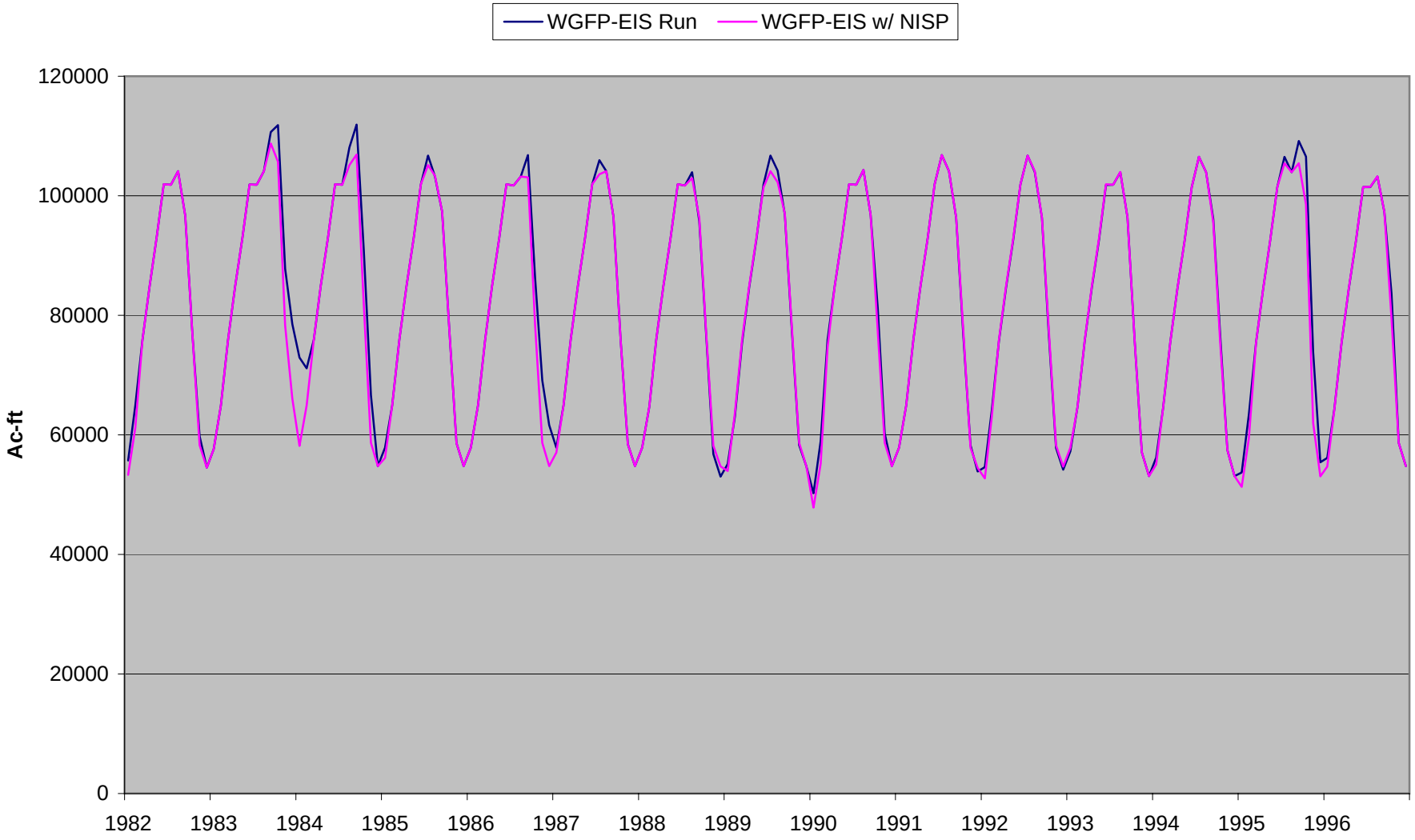
CARTER LAKE
1950-1965



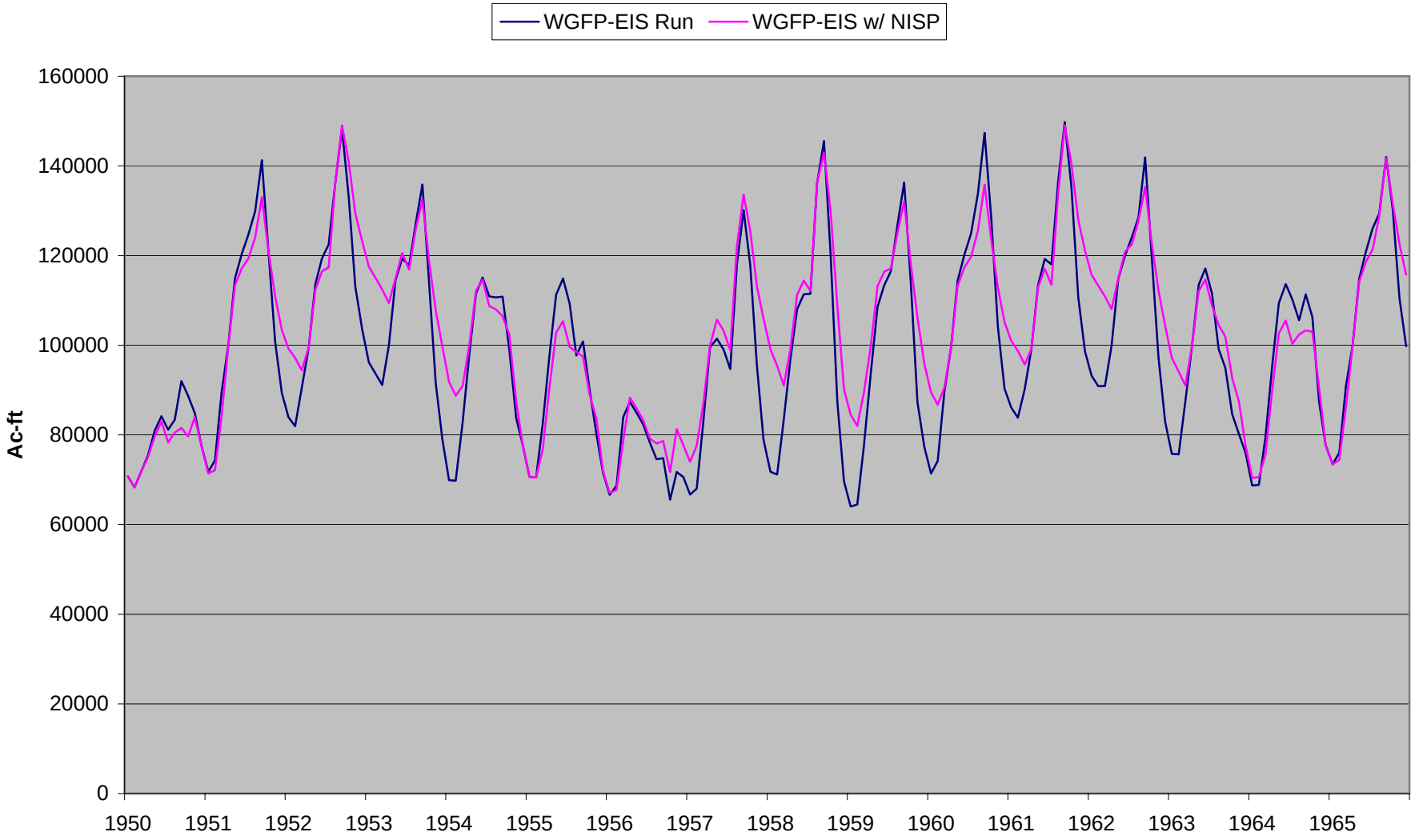
CARTER LAKE
1966-1981



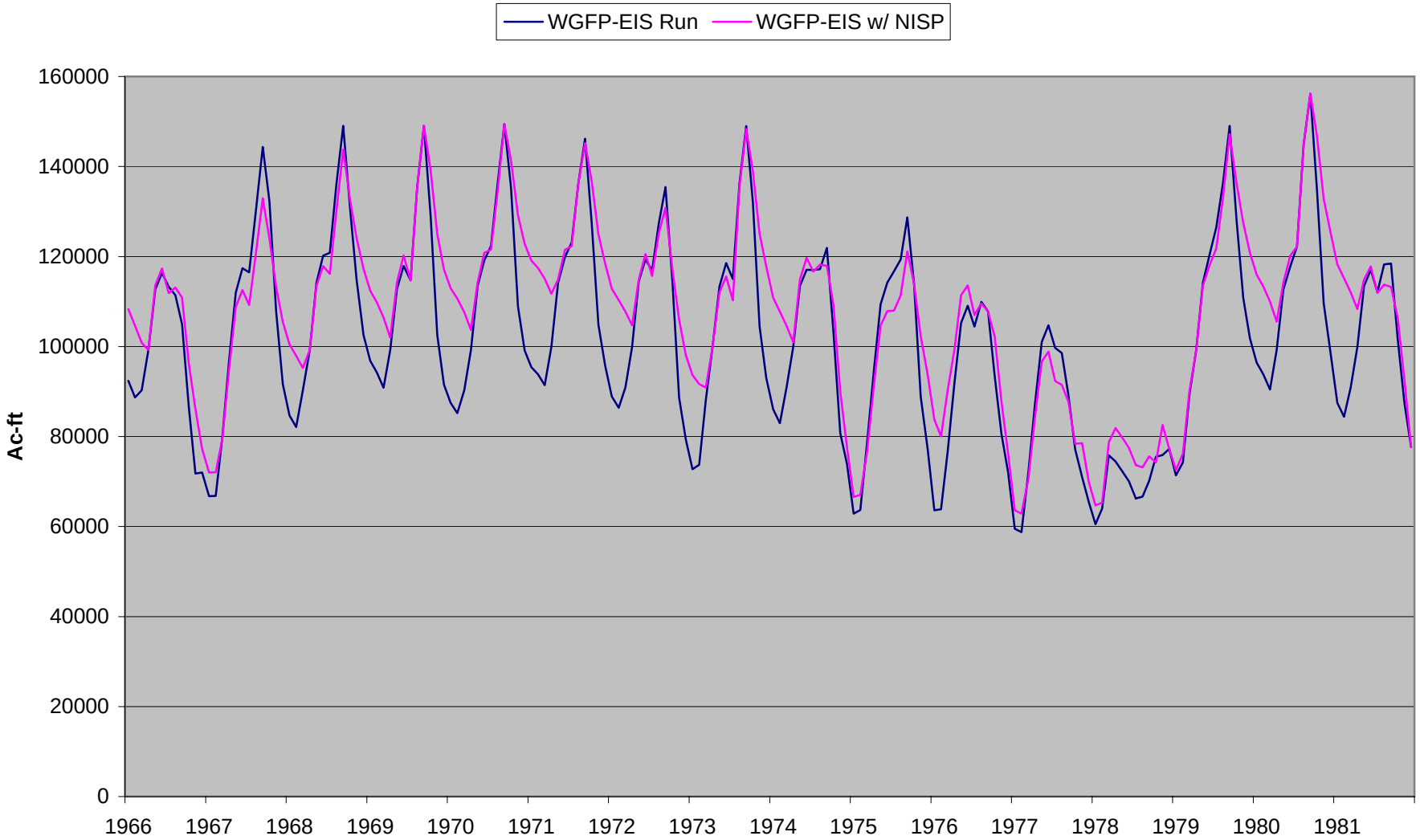
CARTER LAKE
1982-1996



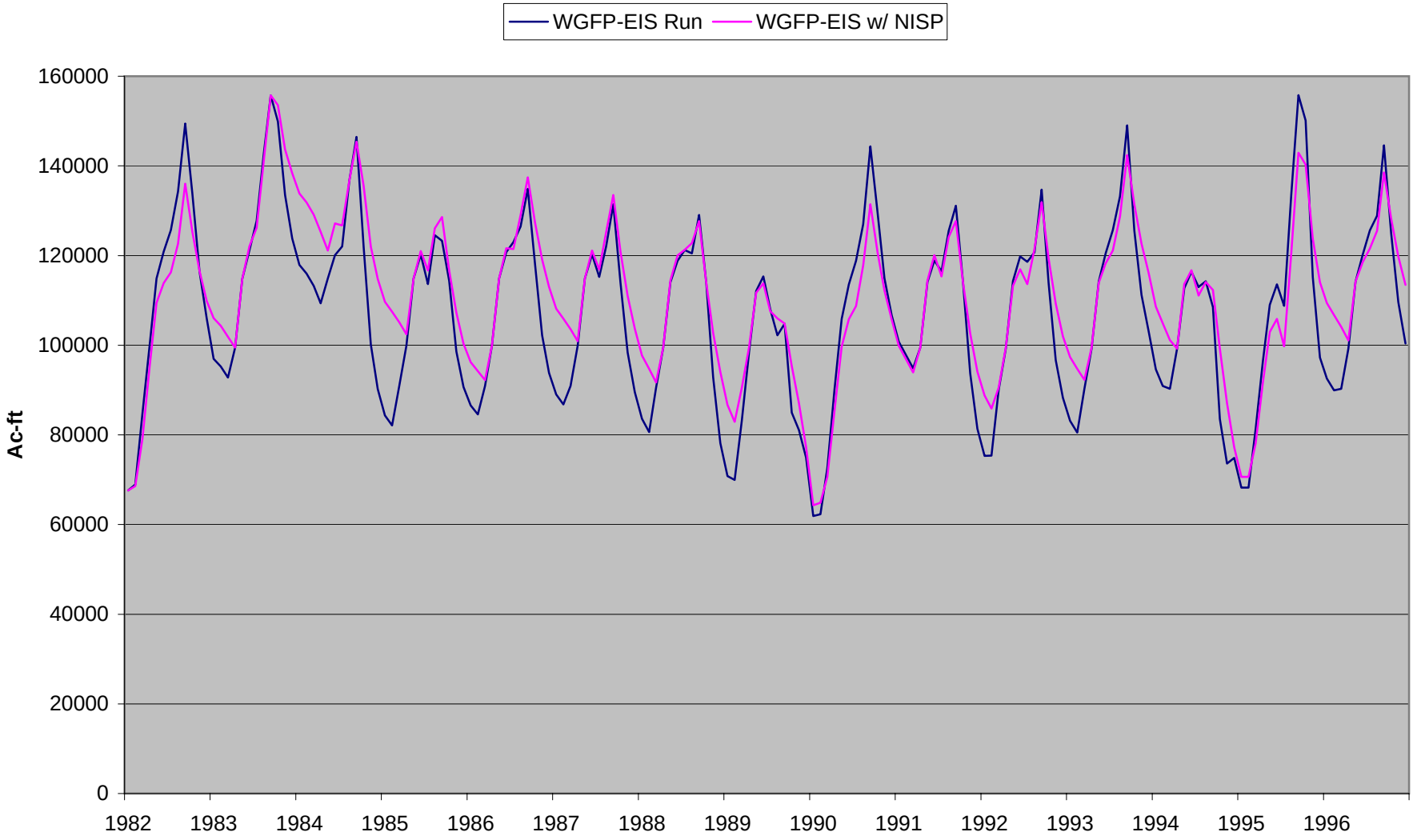
HORSETOOTH RESERSVOIR
1950-1965



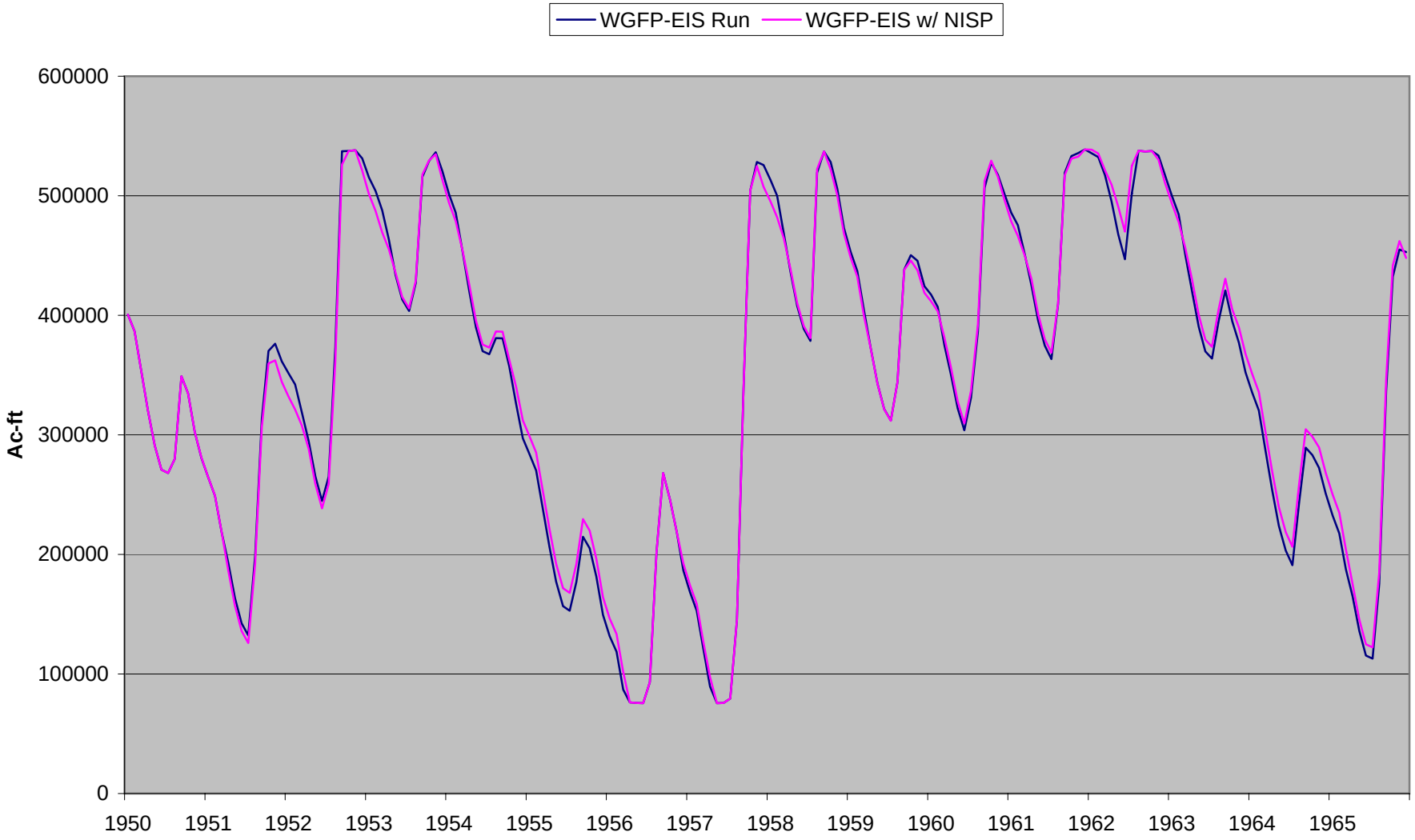
HORSETOOTH RESERSVOIR
1966-1981



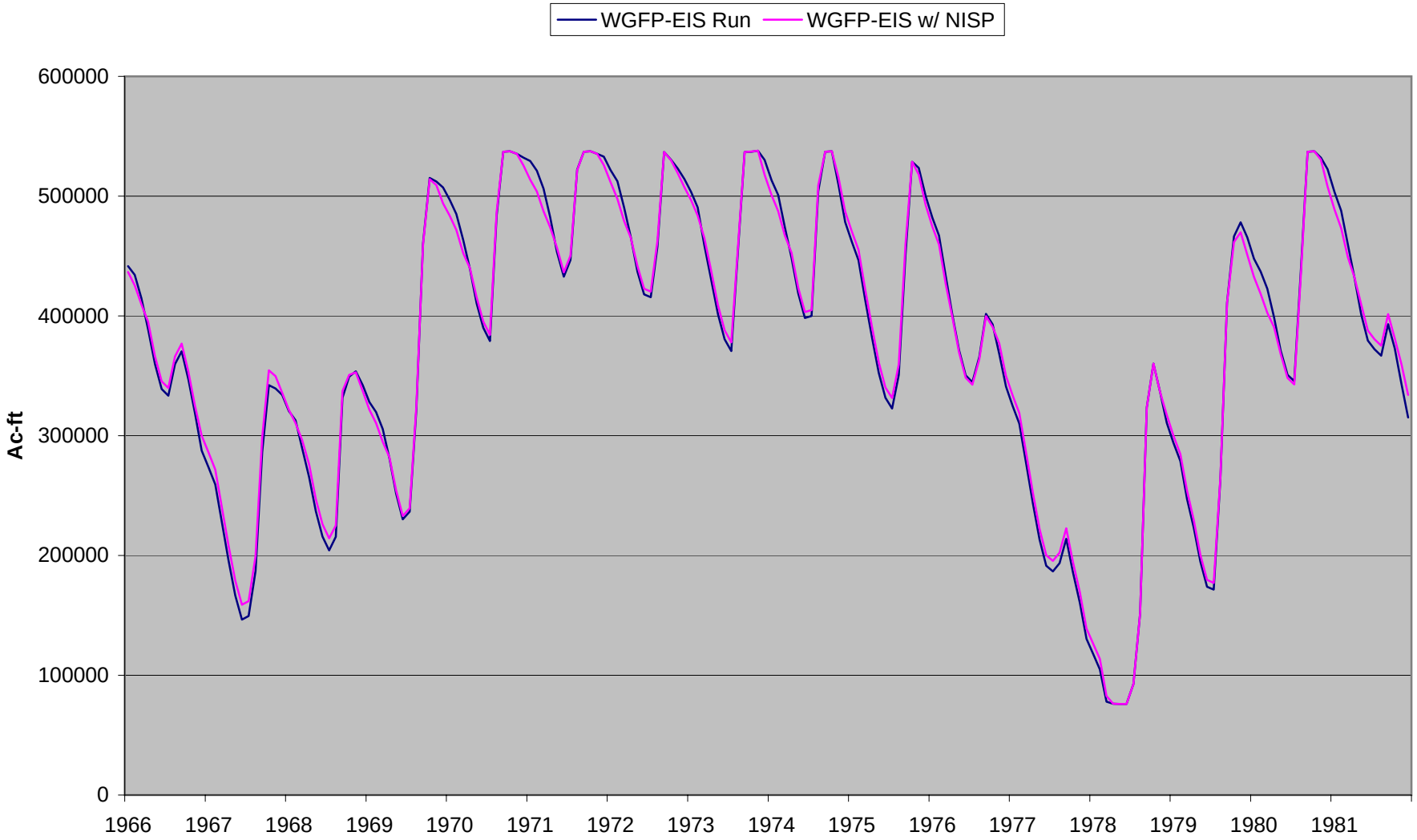
HORSETOOTH RESERVOIR
1982-1996



Lake Granby Reservoir
1950-1965



Lake Granby Reservoir
1966-1981



Lake Granby Reservoir
1982-1996

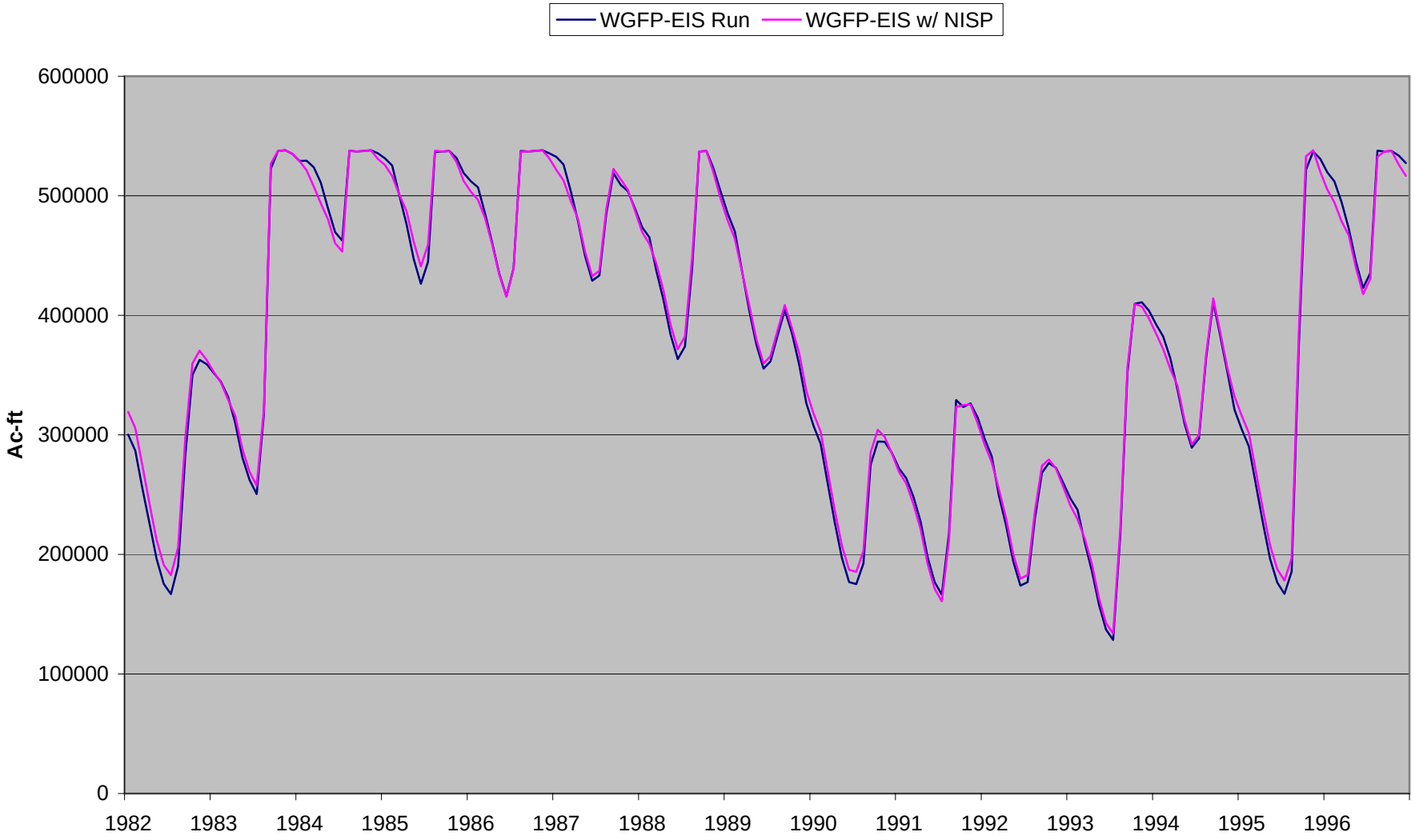


TABLE B-2 Summary of WGFP Model Runs - Existing Conditions Run

WGFP Bestsm modeling results

(1) WGFP Existing Conditions run

(2) WGFP Existing Cond w/ NISP Operations-Substitute water in-lieu of HT releases to Poudre; 40 cfs pipeline to HT

Month 10 = October

Units: Ac-ft

		Adams Tunnel		Unit 3 Pumping		EOM - Carter Lake		EOM - Horsetooth		EOM-Granby	
WY	Month	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run
1950	10	17229	18546	10035	12379	57864	57824	71805	70772	402404	401087
1950	11	17455	17455	9013	10692	64934	64934	76706	73995	388791	387474
1950	12	30742	33818	12960	14599	75940	75940	90912	89623	359400	355006
1950	1	23885	26677	10992	12482	84938	84938	99906	99906	336396	329207
1950	2	28358	29702	9785	11123	92915	92915	114866	114866	308950	300417
1950	3	26183	26183	11084	12724	101923	101923	126041	124402	284885	276356
1950	4	17455	17455	4888	7238	101373	101373	130216	126451	282093	273569
1950	5	33818	33818	15499	16679	104318	102566	133105	130769	293896	285398
1950	6	32727	32727	7413	12839	97146	97147	142884	136772	362982	354512
1950	7	12137	16329	4997	9115	76681	76681	119598	122974	370312	357678
1950	8	13764	17208	5747	9109	57842	57842	96757	111595	358147	342093
1950	9	18315	21309	11032	13974	54120	54120	83754	103084	344122	325085
1951	10	15365	17760	9886	12235	57212	57212	77015	96329	330841	309412
1951	11	15532	12037	9500	10841	63349	63349	79170	93358	318159	300226
1951	12	29304	16864	14377	15718	74355	74355	90181	90348	292645	287146
1951	1	25612	26942	12407	13599	84430	84430	99176	99176	269038	262205
1951	2	29066	30411	10146	11481	92821	92821	114438	114438	241554	233377
1951	3	26183	26183	11013	12652	101923	101923	125679	124040	216875	208703
1951	4	17455	17455	3415	5799	101815	101815	132237	128441	206621	198456
1951	5	30528	33818	12851	15784	104300	104300	136271	135093	276426	265000
1951	6	32512	32727	5982	9661	97146	97146	149009	145802	390555	378952
1951	7	8622	12815	2243	6362	76523	76523	128567	133656	449098	433340
1951	8	10273	13718	3157	6520	57584	57584	108493	123606	456639	437472
1951	9	16162	19157	9700	12604	53688	53688	97038	116080	443663	421515
1952	10	12852	15248	9426	11734	56776	56776	91639	111875	435748	411210
1952	11	11147	12794	9771	11070	63307	63307	89272	109497	428216	402032
1952	12	19050	16657	14255	15554	74313	74313	90178	106374	413633	389831
1952	1	26033	14422	12283	13433	83311	83311	99176	102324	389806	377606
1952	2	30546	26976	11123	12122	91288	91288	113578	114136	360838	352209
1952	3	26183	26183	12378	13677	100296	100296	123385	122529	336914	328289
1952	4	17455	17455	6500	8842	101212	101212	126989	123943	357166	348545
1952	5	11854	15586	10928	13537	104624	104300	136274	136276	470911	458582
1952	6	20351	19077	12179	12132	109034	104878	149009	149009	537079	537097
1952	7	3389	3389	0	0	92445	84134	133902	141006	537439	537439
1952	8	8290	9625	0	1329	69051	58678	113713	129402	538163	538163
1952	9	7323	17639	0	10265	57844	54792	104116	123169	534232	523918
1953	10	11545	16999	6878	12305	57873	57874	96854	117506	522209	506442
1953	11	9931	11577	9005	10643	64935	64935	94332	114973	514013	496601
1953	12	13813	15460	12959	14598	75941	75941	91773	112404	500739	481673
1953	1	23010	13300	10990	12480	84939	84939	99905	109378	479988	470626
1953	2	28354	17946	9784	11122	92916	92916	114866	114863	453086	454132
1953	3	26183	26183	11084	12723	101924	101924	126045	126862	429115	430161
1953	4	17455	17455	8714	11098	106822	106822	127080	125768	419475	420520

TABLE B-2 Summary of WGFP Model Runs - Existing Conditions Run

WGFP Bestsm modeling results

(1) WGFP Existing Conditions run

(2) WGFP Existing Cond w/ NISP Operations-Substitute water in-lieu of HT releases to Poudre; 40 cfs pipeline to HT

Month 10 = October

Units: Ac-ft

		Adams Tunnel		Unit 3 Pumping		EOM - Carter Lake		EOM - Horsetooth		EOM-Granby	
WY	Month	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run
1953	5	32541	33818	8517	11450	104298	104298	136274	135907	443869	443636
1953	6	32727	32727	6546	10224	97146	97146	146446	144045	532723	532491
1953	7	9075	11693	0	2552	78109	76523	123150	130227	537443	537443
1953	8	7579	10006	0	2350	60483	57783	100301	118830	538163	538163
1953	9	14172	19873	6469	12089	54488	54074	87291	110307	524580	518881
1954	10	18190	18546	11669	11989	57823	54895	77763	101939	506170	500115
1954	11	15748	15096	9382	13643	63827	63512	79232	98124	492899	487496
1954	12	30312	17410	14390	16046	75901	75228	90911	94276	463894	471395
1954	1	25110	23900	11361	13513	84938	84928	99906	99476	440035	448749
1954	2	29426	30545	10075	11423	92915	92915	114866	113773	411386	418981
1954	3	26183	26183	11413	13053	101923	101923	124863	121941	388055	395647
1954	4	17455	17455	9473	11857	106814	106814	123176	118194	385554	393141
1954	5	33818	33818	11666	14640	104785	104785	124434	119793	399017	406587
1954	6	32727	32727	9844	13563	97632	97632	125958	119713	398603	406152
1954	7	32524	31078	7082	11242	77616	77616	114381	114389	376622	385597
1954	8	19778	22156	10066	13470	58654	58654	87467	98894	358839	365423
1954	9	26557	23621	13402	16347	54736	54736	77663	83173	336700	346215
1955	10	18546	18546	11321	11286	57544	55161	70616	76119	323475	332987
1955	11	17455	17455	9660	13328	64934	64587	74178	76009	309678	319190
1955	12	33818	33818	13287	15272	75940	75940	90450	90296	277868	287386
1955	1	25535	27186	11323	12812	84938	84938	99906	99906	254244	262115
1955	2	29426	30545	10075	11413	92915	92915	114866	114642	226117	232868
1955	3	26183	26183	11413	13053	101923	101923	124863	123000	201762	208510
1955	4	17455	17455	11352	13735	106814	106814	121775	117532	197835	204577
1955	5	33818	33818	14919	16047	104298	102494	111267	117813	221841	228562
1955	6	32727	32727	10982	16014	97257	96811	115286	118026	259424	266118
1955	7	33818	33818	7726	12309	76921	76921	105348	112351	249710	256382
1955	8	23970	19572	7828	11232	58042	58042	87050	94186	235833	246883
1955	9	30196	26953	14311	17256	54353	54353	77235	78156	206610	220893
1956	10	17118	18546	11093	12478	57824	56861	71832	72752	190640	203490
1956	11	17455	17455	8890	11192	63516	63516	76644	74964	177981	190829
1956	12	31606	33818	14210	15552	75582	75582	90806	89690	148963	159608
1956	1	23749	26369	11183	12673	84938	84938	99906	99906	128100	136133
1956	2	27834	29179	9645	10984	92915	92915	114866	114866	102853	109540
1956	3	23693	26183	10920	12559	101923	101923	124177	125015	81316	85508
1956	4	8340	11504	4276	6617	101212	101212	121415	123015	98265	99290
1956	5	33818	33818	13814	16698	104300	104251	128399	129447	206796	207817
1956	6	32727	32727	6433	10160	97146	97146	141751	139562	273219	274236
1956	7	12273	16466	3917	8035	76523	76523	120831	126948	272310	269138
1956	8	5844	9095	0	3169	57777	57584	101097	116747	273318	266906
1956	9	18182	21370	11495	14591	53687	53688	86644	109047	255973	246380
1957	10	18546	18546	11247	11171	56752	54370	82303	104914	238040	228450
1957	11	11059	15095	9794	13470	63307	63308	79942	102540	229502	215877

TABLE B-2 Summary of WGFP Model Runs - Existing Conditions Run

WGFP Bestsm modeling results

(1) WGFP Existing Conditions run

(2) WGFP Existing Cond w/ NISP Operations-Substitute water in-lieu of HT releases to Poudre; 40 cfs pipeline to HT

Month 10 = October

Units: Ac-ft

		Adams Tunnel		Unit 3 Pumping		EOM - Carter Lake		EOM - Horsetooth		EOM-Granby	
WY	Month	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run
1957	12	28367	16597	14255	15554	74313	74313	90181	99420	203398	201538
1957	1	26027	15963	12283	13433	83311	83311	99176	99173	180350	188557
1957	2	30545	30545	11118	12116	91288	91288	113588	112248	151854	160060
1957	3	26183	26183	12378	13677	100296	100296	123416	120437	128074	136274
1957	4	17455	17455	6376	8748	101414	101414	127549	122191	118681	126872
1957	5	7033	10028	9835	12768	104300	104300	142324	136973	205663	210832
1957	6	2290	4716	15045	15890	111291	108460	152827	149008	404312	407040
1957	7	3694	3694	3366	3313	100601	93611	140541	140872	537428	537585
1957	8	5307	5307	0	-65	76346	65959	118096	128465	538163	538163
1957	9	7144	13478	0	6226	60709	53682	101377	121072	537122	530790
1958	10	11673	18546	4468	11230	56773	54225	94282	114267	532024	518821
1958	11	12053	16255	10428	14269	63307	63308	90572	110545	524672	507268
1958	12	20101	17637	14909	16208	74313	74313	90178	106053	507211	492265
1958	1	29047	15451	12945	14095	83311	83311	99176	100030	480468	479115
1958	2	30545	30545	11698	12696	91288	91288	110516	112252	452398	451045
1958	3	26183	26183	13036	14335	100296	100296	117887	120443	429468	428115
1958	4	17455	17455	5824	8166	101212	101212	118691	118861	419502	418150
1958	5	6062	5844	16829	16782	105577	102598	136279	136279	537775	536643
1958	6	23202	23202	9525	14167	99734	97681	146484	143891	537003	537004
1958	7	15136	21387	4933	11153	77631	77632	121030	130715	529855	523612
1958	8	22499	22985	8711	12137	58682	58682	87458	111115	510946	504223
1958	9	32727	29220	21494	21494	54194	51217	72279	92670	478617	475404
1959	10	18546	18546	10587	10587	57000	51650	66633	86999	458937	455725
1959	11	17455	17455	9875	16491	64935	64578	70744	84484	443351	440139
1959	12	33818	24846	12958	14954	75941	75942	88098	90910	411109	416870
1959	1	26703	25374	10990	12480	84939	84939	99906	99906	386377	393469
1959	2	28353	29699	9784	11122	92916	92916	114866	114866	359852	365598
1959	3	26183	26183	11084	12723	101924	101924	126045	124406	335261	341004
1959	4	17455	17455	4282	6666	101823	101823	131780	127761	325569	331310
1959	5	23692	30134	14294	16643	104300	103716	136271	136274	364791	364084
1959	6	30899	30899	6717	10978	97146	97146	147305	144875	458537	457832
1959	7	11179	15371	4072	8191	76567	76567	124901	130920	472228	467337
1959	8	14126	17571	5539	8901	57584	57584	98180	118857	468370	460045
1959	9	19905	22899	13286	16189	53740	53740	82823	108536	454254	442941
1960	10	16703	18546	10967	12725	56990	56440	76451	102133	449420	436267
1960	11	16264	12754	9721	11569	63307	63307	79170	99158	440560	430919
1960	12	29276	16835	14419	15718	74313	74313	90181	96145	413706	416503
1960	1	25650	21153	12448	13635	83348	83348	99176	99174	390228	397525
1960	2	30162	30546	11232	12272	92021	92021	114137	113179	363049	369961
1960	3	26183	26183	11812	13153	101457	101457	124283	121687	341085	347994
1960	4	17455	17455	3735	6077	101212	101212	130981	126006	368333	375239
1960	5	28188	33183	12884	15817	104300	104300	136272	133292	428571	430471
1960	6	29396	31521	5415	9093	97146	97146	149009	144767	537112	536885

TABLE B-2 Summary of WGFP Model Runs - Existing Conditions Run

WGFP Bestsm modeling results

(1) WGFP Existing Conditions run

(2) WGFP Existing Cond w/ NISP Operations-Substitute water in-lieu of HT releases to Poudre; 40 cfs pipeline to HT

Month 10 = October

Units: Ac-ft

		Adams Tunnel		Unit 3 Pumping		EOM - Carter Lake		EOM - Horsetooth		EOM-Granby	
WY	Month	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run
1960	7	6894	11087	1341	5459	76523	76523	130033	132470	537439	537439
1960	8	12716	16161	4505	7868	57584	57584	105673	121674	528968	525526
1960	9	16897	19892	9928	12831	53688	53688	91848	113965	514492	508058
1961	10	14628	17024	9445	11753	56922	56852	87699	109839	501068	492239
1961	11	10889	12606	9625	10994	63307	63307	85335	107462	492546	481999
1961	12	22947	16598	14255	15554	74313	74313	90179	104340	470504	466304
1961	1	26029	14418	12283	13433	83311	83311	99176	100291	445234	452645
1961	2	30545	29088	11118	12121	91449	91293	113588	114136	416173	425041
1961	3	26183	26183	12218	13715	101457	101154	123576	123367	391893	400758
1961	4	17455	17455	10217	12904	106465	106465	123870	120976	380367	389227
1961	5	17449	23261	4885	7727	104389	104298	136276	136278	433138	436172
1961	6	2290	2310	14849	15890	111368	108642	150075	149009	537141	537136
1961	7	4542	4542	0	-51	93551	86722	135692	140496	537439	537439
1961	8	7342	7342	0	-23	69143	58930	110865	127939	538163	538163
1961	9	6534	17362	0	10739	57175	54095	98917	121090	539178	539178
1962	10	9774	15262	6324	11780	57873	57874	93495	115658	539540	539540
1962	11	9720	11366	8922	10561	64935	64935	91116	113266	539685	539504
1962	12	15905	15330	12877	14516	75941	75941	90908	110837	528014	528407
1962	1	23581	13170	10908	12397	84939	84939	99906	107979	508578	519383
1962	2	28087	19085	9711	11050	92916	92916	114866	114864	484066	503872
1962	3	26183	26183	11001	12641	101924	101924	126366	127183	459884	479683
1962	4	16632	17455	3435	5777	101212	101212	132277	131529	515760	534728
1962	5	33149	33427	15615	16745	104684	102973	136700	136700	537674	537658
1962	6	28974	30994	5840	11411	97653	97654	149437	145920	537003	537003
1962	7	14768	18960	4832	9003	77632	77632	127054	133306	537439	537439
1962	8	11050	14495	3382	6809	58682	58682	104804	122771	536045	532603
1962	9	15791	18786	8714	11693	54792	54792	90465	114948	522381	515946
1963	10	18546	18546	10950	10950	57231	54848	83266	107740	506108	499675
1963	11	10998	15034	9972	13988	64935	64936	80192	104652	497100	486630
1963	12	28234	15980	13286	14925	75941	75941	90911	101530	469083	470865
1963	1	25066	13916	11321	12811	84939	84939	99906	99903	445379	458316
1963	2	29422	30545	10074	11413	92916	92916	114866	114643	417434	429246
1963	3	26183	26183	11413	13052	101924	101924	124902	123040	393234	405042
1963	4	17455	17455	10001	12385	106822	106822	121875	118775	387183	398985
1963	5	33818	33818	16093	16084	101651	98672	110843	115971	418637	430412
1963	6	32727	32727	14638	16472	97418	92584	107556	114504	443975	455712
1963	7	33818	33818	7503	16484	77319	77322	98395	107557	418227	429932
1963	8	25168	14815	3785	7186	58632	58632	87487	88712	408871	430901
1963	9	24593	26356	12304	15249	54736	54736	77663	77662	392463	412717
1964	10	18546	18546	10380	10345	55361	52978	70381	70380	376066	396315
1964	11	17455	17455	11673	13213	64446	62186	72309	70553	361453	381701
1964	12	33818	33818	13609	17503	75940	75940	88633	82987	328212	348469
1964	1	26765	33818	11157	12647	84938	84938	99906	99790	302882	316094

TABLE B-2 Summary of WGFP Model Runs - Existing Conditions Run

WGFP Bestsm modeling results

(1) WGFP Existing Conditions run

(2) WGFP Existing Cond w/ NISP Operations-Substitute water in-lieu of HT releases to Poudre; 40 cfs pipeline to HT

Month 10 = October

Units: Ac-ft

		Adams Tunnel		Unit 3 Pumping		EOM - Carter Lake		EOM - Horsetooth		EOM-Granby	
WY	Month	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run
1964	2	28902	30364	9936	11274	92915	92915	114866	114867	275062	286810
1964	3	26183	26183	11249	12888	101923	101923	125452	123813	250721	262463
1964	4	17455	17455	10068	12452	106814	106814	124535	120515	238512	250246
1964	5	33818	33818	15757	16047	104298	101656	120948	123729	290470	302169
1964	6	32727	32727	8319	14634	97146	97147	127936	126640	336547	348207
1964	7	23483	19985	4781	8898	76567	76567	113950	113951	340516	355640
1964	8	13960	17404	4877	8239	57778	57778	89590	101018	336191	347846
1964	9	19902	20927	10278	13182	53924	53924	77232	86964	318890	329513
1965	10	17459	18546	12186	13220	57200	55898	72559	82279	302060	311594
1965	11	17455	13032	9348	11987	63349	63349	77218	79596	287312	301267
1965	12	30656	29913	14214	15555	74355	74355	90181	90181	259956	274662
1965	1	25012	26510	12241	13433	84248	84248	99176	99176	238060	251277
1965	2	28715	30060	10183	11374	92600	92600	114438	114438	210887	222758
1965	3	26183	26183	11069	12708	101755	101755	126048	124409	186632	198496
1965	4	16581	17455	3996	6361	101499	101499	132277	129127	184882	195864
1965	5	33694	32796	12488	15421	104300	104300	136271	136273	247457	259300
1965	6	19472	18994	11952	11905	104874	101151	149009	149009	409989	422267
1965	7	4646	4646	1177	1124	88994	81114	137142	138611	506158	518412
1965	8	6372	7353	0	912	67877	57581	117477	129639	529915	538176
1965	9	6828	20143	201	13374	53681	53688	106726	122813	530943	525887
1966	10	17197	18546	11361	12626	56776	55741	99315	115404	521412	515009
1966	11	11457	14142	10425	12757	63307	63307	95501	111581	516246	507158
1966	12	15968	17616	14909	16208	74313	74313	91654	107726	502806	492068
1966	1	25954	15451	12945	14095	83311	83311	99175	103302	479146	478908
1966	2	30545	26756	11698	12696	91288	91288	112897	114135	450326	453878
1966	3	26183	26183	13036	14335	100296	100296	120577	122634	426182	429731
1966	4	17455	17455	10824	13166	106211	106211	117843	117515	420543	424091
1966	5	33818	33818	16000	16117	104298	101483	116507	119787	446774	450313
1966	6	32727	32727	15076	16127	97183	91751	111279	118447	457057	460585
1966	7	33818	33818	9289	17842	76567	75588	93631	104796	433525	437043
1966	8	33818	24104	8610	12949	57584	57585	79561	87050	404893	418111
1966	9	28678	24144	9522	12425	53688	53688	77242	77235	378326	396068
1967	10	18546	18546	11287	11211	55531	53148	71968	71960	364529	382267
1967	11	17455	17455	11176	13360	63307	61815	74493	71963	350716	368453
1967	12	33818	33818	14418	17205	74313	74314	90025	84370	319347	337092
1967	1	25806	32987	12448	13598	83311	83311	99176	99177	295949	306521
1967	2	30188	30545	11263	12261	91288	91288	114137	113155	267805	278019
1967	3	26183	26183	12542	13842	100296	100303	123572	120953	244134	254342
1967	4	17455	17455	10853	13187	106211	106211	123148	118156	247071	257272
1967	5	32319	33818	8136	11069	104298	104298	136277	130514	285800	294473
1967	6	26619	28949	4848	8526	97146	97146	149009	143651	387106	393424
1967	7	3965	3965	11482	11429	93151	88982	136922	134627	443709	450009
1967	8	9634	10320	0	617	64493	57598	112508	123878	441747	447349

TABLE B-2 Summary of WGFP Model Runs - Existing Conditions Run

WGFP Bestsm modeling results

(1) WGFP Existing Conditions run

(2) WGFP Existing Cond w/ NISP Operations-Substitute water in-lieu of HT releases to Poudre; 40 cfs pipeline to HT

Month 10 = October

Units: Ac-ft

		Adams Tunnel		Unit 3 Pumping		EOM - Carter Lake		EOM - Horsetooth		EOM-Granby	
WY	Month	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run
1967	9	10493	20399	3761	13541	53683	53688	96253	116050	439183	434879
1968	10	15998	18389	9659	11962	56776	56776	89300	111112	428018	421323
1968	11	10442	12090	9771	11070	63307	63307	86613	108412	422235	413894
1968	12	21256	16575	14255	15554	74313	74313	90179	105673	403927	400263
1968	1	25057	14418	12283	13433	83311	83311	99176	102590	380668	387643
1968	2	29665	27215	11123	12122	91288	91288	114137	114135	353109	362533
1968	3	26183	26183	12378	13677	100296	100296	124158	122518	328438	337858
1968	4	17455	17455	10413	12754	106211	106211	125143	121122	316760	326175
1968	5	28281	33761	6831	9763	104298	104298	136275	135905	332609	336529
1968	6	25534	29073	4100	7779	97146	97146	149009	149009	449341	449716
1968	7	8994	13187	3272	7391	76523	76523	131123	138024	468418	464604
1968	8	5341	7520	0	2103	58842	57629	114888	129345	473716	467731
1968	9	13809	18020	7176	11290	53883	53901	102535	122465	463596	453406
1969	10	15696	18075	10023	12313	56990	56990	96812	117611	451194	438629
1969	11	11075	12722	9722	11040	63307	63325	94107	114894	444624	430412
1969	12	15210	16839	14419	15742	74353	74355	90649	111426	431252	415404
1969	1	26271	14635	12409	13599	83353	83370	99176	106880	407526	403309
1969	2	30545	23179	11221	12244	92243	92450	112862	114134	378490	381641
1969	3	26183	26183	11590	12725	101457	101457	123027	125325	353403	356552
1969	4	17455	17455	10805	13147	106236	106236	121271	121183	359642	362789
1969	5	18038	18126	8937	8890	108369	105390	136278	136278	451325	454376
1969	6	3924	7490	11046	15767	111212	109285	149009	149009	537110	537104
1969	7	4705	4705	840	787	93341	87252	129145	139257	537439	537439
1969	8	10540	11308	0	729	66567	57842	102514	124973	535545	534778
1969	9	5992	17732	155	11800	53937	53942	91520	117059	533788	521284
1970	10	18546	18546	11607	11572	53462	51085	87410	112932	523996	511495
1970	11	14419	17455	13076	15798	63349	62360	85046	110554	515360	499823
1970	12	23195	17546	14213	16541	75400	75413	90179	107431	495087	485194
1970	1	24939	13317	11199	12379	84473	84473	99176	103380	472872	474600
1970	2	29932	24819	9959	11075	92450	92525	114429	114436	445212	452053
1970	3	26183	26183	11219	12783	101755	101755	125694	126597	421292	428129
1970	4	17455	17455	5082	7466	101522	101555	130595	129114	410160	416995
1970	5	21950	26399	10033	12933	104300	104300	136272	136273	523960	526336
1970	6	5583	7031	14495	15937	111841	109558	149438	149438	537019	537016
1970	7	3690	3690	626	626	95591	89149	135283	141298	537439	537439
1970	8	6631	6631	0	0	71577	61736	108917	129144	538163	538163
1970	9	5700	12120	0	6387	61187	54790	99129	122821	538021	531603
1971	10	6272	15078	1735	10497	57871	57874	95440	119117	538342	523120
1971	11	9997	11642	8679	10315	64935	64935	93802	117465	533260	516394
1971	12	13315	14962	12632	14271	75941	75941	91417	115069	521308	502789
1971	1	23150	12783	10659	12149	84939	84939	99906	111745	500449	492292
1971	2	28728	15941	9494	10832	92916	92916	114866	114863	473992	478621
1971	3	26183	26183	10754	12394	101924	101924	127029	127845	449724	454351

TABLE B-2 Summary of WGFP Model Runs - Existing Conditions Run

WGFP Bestsm modeling results

(1) WGFP Existing Conditions run

(2) WGFP Existing Cond w/ NISP Operations-Substitute water in-lieu of HT releases to Poudre; 40 cfs pipeline to HT

Month 10 = October

Units: Ac-ft

		Adams Tunnel		Unit 3 Pumping		EOM - Carter Lake		EOM - Horsetooth		EOM-Granby	
WY	Month	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run
1971	4	17395	17455	4914	7256	101212	101212	132277	130770	463758	468322
1971	5	7167	10161	10343	13276	104300	104300	142046	140541	537721	537716
1971	6	12963	15805	14614	15937	111570	109169	149431	149433	537003	537003
1971	7	7038	7038	0	0	93801	87240	130547	140922	537439	537439
1971	8	6624	6624	0	0	69347	59389	108062	129135	538163	538163
1971	9	4872	12317	0	7408	60286	54792	99025	122706	539178	532019
1972	10	12932	18546	5713	11299	57872	55598	92141	117068	531165	518394
1972	11	9848	13774	9006	12912	64935	64935	89622	114535	524966	508270
1972	12	17676	15460	12959	14598	75941	75941	90908	111966	509250	494764
1972	1	23878	13300	10990	12480	84939	84939	99906	108940	487586	483676
1972	2	28364	18317	9790	11128	92916	92916	114866	114864	461378	467515
1972	3	26183	26183	11084	12723	101924	101924	126073	126890	438758	444892
1972	4	17455	17455	9668	12052	106822	106822	126187	124620	436360	442490
1972	5	32353	33818	8245	11177	104298	104298	136275	135132	480014	484667
1972	6	32727	32727	8295	12020	97428	97428	145938	142444	537067	537061
1972	7	15187	19380	7041	11183	77172	77172	120669	128260	535794	531599
1972	8	12065	15510	4109	7513	58632	58632	94821	116985	530328	522697
1972	9	15536	18530	8604	11549	54736	54736	85550	109097	524688	514066
1973	10	17410	18546	11159	12254	57825	56572	78898	104601	515487	503731
1973	11	13292	13215	8889	11617	64567	64567	79899	102622	506944	495266
1973	12	27751	15595	13162	14801	75940	75940	90911	99890	481734	482211
1973	1	24417	16356	10826	12316	84938	84938	99906	99903	459483	468024
1973	2	29504	30545	9640	10978	92915	92915	114866	114562	431742	439240
1973	3	26183	26183	10920	12559	101923	101923	126407	124464	407153	414649
1973	4	17455	17455	10543	12927	106814	106814	125394	121071	397271	404763
1973	5	3071	6915	8477	8430	107331	104352	136773	136278	492707	496342
1973	6	19392	19924	12160	12194	111588	104929	149437	149438	537050	537046
1973	7	5173	5173	0	0	94336	83533	132531	140045	537439	537439
1973	8	8054	12606	0	4529	68337	58678	104910	126209	538163	538163
1973	9	7532	20208	545	13157	54786	54792	93438	118914	533701	521028
1974	10	18546	18546	12810	12810	57430	55053	86454	111937	517222	504551
1974	11	10904	14934	9774	13784	64935	64936	83378	108846	510639	493939
1974	12	25031	15980	13286	14925	75941	75941	90910	105723	487244	479590
1974	1	25067	13816	11321	12811	84939	84939	99906	102030	464686	468283
1974	2	29422	26400	10074	11413	92916	92916	114866	114866	436560	443179
1974	3	26183	26183	11413	13052	101924	101924	124867	125459	412752	419368
1974	4	17455	17455	5615	7962	101352	101352	126933	125141	414471	421084
1974	5	33301	33301	16731	16684	103686	100707	128545	128100	518451	525051
1974	6	29354	29354	10869	16278	97500	96214	134161	128338	537025	537018
1974	7	31215	26362	8390	13844	77451	77633	114172	114378	537439	537439
1974	8	27389	25651	11918	15164	58654	58682	87467	95313	515844	517582
1974	9	27198	25629	11900	14852	54761	54792	77663	80992	490793	494098
1975	10	18546	18546	11464	12866	57874	56956	67981	69905	474608	477913

TABLE B-2 Summary of WGFP Model Runs - Existing Conditions Run

WGFP Bestsm modeling results

(1) WGFP Existing Conditions run

(2) WGFP Existing Cond w/ NISP Operations-Substitute water in-lieu of HT releases to Poudre; 40 cfs pipeline to HT

Month 10 = October

Units: Ac-ft

		Adams Tunnel		Unit 3 Pumping		EOM - Carter Lake		EOM - Horsetooth		EOM-Granby	
WY	Month	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run
1975	11	17455	17455	9003	11558	64799	64935	72937	72306	459767	463072
1975	12	33818	33818	13094	14598	75942	75941	90154	88020	427104	430410
1975	1	24636	28279	10990	12480	84939	84939	99906	99906	404851	404515
1975	2	28353	29698	9784	11122	92916	92916	114866	114866	378326	376645
1975	3	26183	26183	11084	12723	101924	101924	126045	124406	354084	352405
1975	4	17455	17455	4721	7105	101823	101823	131086	127066	345221	343542
1975	5	33379	33379	14292	16629	104300	103704	134753	131473	373182	371507
1975	6	21025	21025	11702	11655	101972	97654	145540	142678	472736	471066
1975	7	5639	11281	0	5561	79383	76523	126458	128982	537500	530883
1975	8	15816	22126	6780	12994	57582	57584	101304	117314	534187	521272
1975	9	21857	24849	12395	15296	53743	53730	88681	108706	513521	497620
1976	10	17448	18546	11624	12640	56990	55686	75036	98659	497114	480118
1976	11	17455	14303	10213	12812	63307	63307	77311	94846	482587	468744
1976	12	33635	18487	14909	16208	74313	74313	90181	90999	449608	450911
1976	1	27435	28110	12945	14129	83350	83345	99176	99175	423821	424449
1976	2	30546	30546	11665	12711	92070	91985	112927	111583	394942	395570
1976	3	26183	26183	12256	13682	101457	101457	121396	118285	370208	370837
1976	4	17455	17455	9731	12098	106396	106396	119156	113665	364576	365204
1976	5	33818	33818	11813	14746	104298	104298	125487	117557	385551	386177
1976	6	32727	32727	12254	15810	97222	97100	124415	116648	421567	422192
1976	7	33818	33818	8197	12437	76671	76671	110921	112231	412588	413211
1976	8	21635	22038	10225	13601	57833	57833	87042	97763	399832	400051
1976	9	30239	29443	14513	17458	54109	54089	77235	84166	375737	376752
1977	10	18546	18546	12478	12443	56972	54570	64646	71568	360010	361025
1977	11	17455	17455	10230	13135	63349	62517	67015	70731	345514	346530
1977	12	33818	33818	14868	17038	74683	74683	80980	82226	312478	313494
1977	1	33818	33818	12576	13768	84473	84473	96988	96723	279844	280860
1977	2	30545	30545	10539	11878	92748	92748	112171	110568	250132	251149
1977	3	26183	26183	11580	13220	101755	101755	121608	118367	224810	225825
1977	4	17455	17455	10783	13167	106646	106646	118537	112918	219933	220948
1977	5	33818	33818	13681	16092	104611	104063	118246	113186	226787	227798
1977	6	32727	32727	15338	15849	96891	93168	109510	110419	246999	248006
1977	7	33818	33818	8067	15941	77003	77006	98448	102412	218983	219987
1977	8	27291	18556	7346	10748	58044	58043	87059	88553	200017	209743
1977	9	26999	28493	12388	15334	54553	54456	77235	77233	175852	184076
1978	10	16079	18546	10089	12509	57825	57800	72026	72024	166094	171848
1978	11	17455	17455	8725	10091	64133	64133	77575	75909	153661	159414
1978	12	29511	32833	13431	15071	75940	75940	90482	90483	127409	129844
1978	1	23121	24618	10661	12151	84938	84938	99477	99477	107027	107967
1978	2	20246	20907	9494	10833	92915	92915	107003	106323	89595	89873
1978	3	3378	3378	427	427	91596	89957	106592	105912	89010	89289
1978	4	10835	10862	8825	8811	95929	91939	102319	101640	104136	104386
1978	5	33818	33818	17384	17825	103667	97199	109665	108499	162927	163176

TABLE B-2 Summary of WGFP Model Runs - Existing Conditions Run

WGFP Bestsm modeling results

(1) WGFP Existing Conditions run

(2) WGFP Existing Cond w/ NISP Operations-Substitute water in-lieu of HT releases to Poudre; 40 cfs pipeline to HT

Month 10 = October

Units: Ac-ft

		Adams Tunnel		Unit 3 Pumping		EOM - Carter Lake		EOM - Horsetooth		EOM-Granby	
WY	Month	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run
1978	6	25065	25065	7662	14801	100138	97150	124766	116424	334850	335098
1978	7	14086	13837	0	268	83347	76523	113954	113965	391240	391736
1978	8	7768	14818	0	6950	60794	57584	93648	105034	393382	386833
1978	9	11866	18079	6587	12692	53685	53688	84299	98484	383523	370768
1979	10	13902	16296	9517	11822	56776	56776	76729	93762	370464	355318
1979	11	15691	12191	9771	11070	63307	63307	79170	91073	357335	345690
1979	12	29288	17128	14255	15554	74313	74313	90181	90178	330763	331276
1979	1	25055	24316	12283	13433	83311	83311	99176	99176	308461	309713
1979	2	29654	30545	11118	12116	91288	91288	114137	113685	280559	280920
1979	3	26183	26183	12378	13677	100296	100296	124137	122047	256139	256500
1979	4	17455	17455	4562	6904	101212	101212	130800	126330	253627	253987
1979	5	13958	21445	12572	15505	104300	104300	136272	136275	350522	343403
1979	6	21060	21057	9364	9317	102508	98785	149009	149009	498554	491458
1979	7	4821	8311	758	4177	80930	76522	128024	138079	537471	530870
1979	8	5556	8315	0	2681	62654	57584	110740	129233	538163	538168
1979	9	11524	19600	3178	11138	53684	53688	101784	122617	529178	521108
1980	10	16349	18546	10153	12263	56776	56582	96376	117783	513356	503090
1980	11	11362	13205	9934	11428	63307	63307	93672	115066	504502	492395
1980	12	15210	16858	14419	15718	74313	74313	90214	111598	491051	477291
1980	1	26748	14677	12448	13598	83311	83311	99176	107052	468027	466335
1980	2	30546	22996	11268	12267	91288	91288	112810	114134	440291	446149
1980	3	26183	26183	12542	13842	100296	100296	121999	124143	416560	422415
1980	4	17455	17455	7010	9352	101212	101212	126754	126512	411252	417104
1980	5	3071	4646	12292	13812	105712	104300	149450	149208	505264	509532
1980	6	2624	2624	14355	15890	111339	107558	156151	156151	537036	537033
1980	7	4472	4472	2327	2327	95956	88020	134557	146683	537439	537439
1980	8	7168	8000	0	829	69176	58675	109593	132832	534568	533736
1980	9	8631	21405	0	12710	55528	54792	98837	125507	527906	514303
1981	10	18546	18546	10263	10263	56638	53522	87490	118254	509388	495788
1981	11	12375	17145	10563	15310	64935	64936	84414	115160	499141	480770
1981	12	23990	15980	13286	14924	75941	75941	90910	112034	475074	464708
1981	1	25067	13816	11321	12811	84939	84939	99906	108338	449980	450864
1981	2	29422	20060	10074	11413	92916	92916	114866	114864	421115	431360
1981	3	26183	26183	11413	13052	101924	101924	124867	123576	395859	406100
1981	4	17455	17455	10615	12999	106822	106822	122448	118776	388540	398775
1981	5	33818	33818	11504	14484	104821	104821	130077	123957	383155	393368
1981	6	32727	32727	10923	14624	97438	97438	131207	124609	409457	419640
1981	7	32329	29064	9385	13545	77377	77377	114282	114290	390540	403959
1981	8	19477	22921	10114	13518	58654	58654	88631	100584	374666	384620
1981	9	26345	24452	12125	15070	54736	54736	77662	85090	350678	362518
1982	10	18546	18546	10976	11520	57825	56021	68173	75013	336183	348020
1982	11	17455	17455	8725	12006	64576	64577	74251	77649	322963	334800
1982	12	32408	30640	12989	14628	75940	75940	90912	90911	292975	306587

TABLE B-2 Summary of WGFP Model Runs - Existing Conditions Run

WGFP Bestsm modeling results

(1) WGFP Existing Conditions run

(2) WGFP Existing Cond w/ NISP Operations-Substitute water in-lieu of HT releases to Poudre; 40 cfs pipeline to HT

Month 10 = October

Units: Ac-ft

		Adams Tunnel		Unit 3 Pumping		EOM - Carter Lake		EOM - Horsetooth		EOM-Granby	
WY	Month	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run
1982	1	22689	24187	10661	12151	84938	84938	99906	99906	272590	284710
1982	2	27289	28634	9495	10833	92915	92915	114866	114866	246557	257332
1982	3	26183	26183	10755	12394	101923	101923	127240	125601	222205	232973
1982	4	15588	17455	4009	6390	101740	101740	132615	130455	215320	224214
1982	5	27824	32310	13506	16439	104300	104300	136271	136272	244509	248896
1982	6	27347	30887	4175	7853	97146	97146	149009	149009	340465	341303
1982	7	5406	9599	99	4217	76523	76523	133335	138237	409798	406446
1982	8	5145	7350	0	2130	58815	57584	116001	129454	424426	418875
1982	9	12610	16839	7194	11326	53687	53688	105509	122736	422525	412750
1983	10	13038	15433	8144	10451	56776	56776	96504	118924	416996	404828
1983	11	10781	12429	9607	10906	63307	63307	94470	116878	411646	397832
1983	12	14690	16337	14091	15391	74313	74313	91697	114094	400033	384564
1983	1	23749	14160	12117	13267	83311	83311	99175	110533	378041	372157
1983	2	30325	18022	10972	11971	91288	91288	114137	114133	349907	356326
1983	3	26183	26183	12213	13512	100296	100296	124578	125395	327454	333870
1983	4	17455	17455	5742	8083	101212	101212	131593	130026	315736	322148
1983	5	7715	10710	9194	12127	104300	104300	146610	145045	383197	386602
1983	6	2025	2025	13945	15890	111324	109591	155725	155727	537213	537208
1983	7	3900	3900	13085	13717	111830	106568	150532	153507	537439	537439
1983	8	5816	5816	0	0	87831	79162	134131	143646	538163	538163
1983	9	5554	5554	0	0	78549	66932	124396	138331	538124	538124
1984	10	6394	6394	0	0	72967	59008	118558	133857	535427	535427
1984	11	1301	10696	0	9348	71144	64935	116571	131862	539686	531327
1984	12	7352	15223	6604	14435	75941	75941	113827	129111	537151	520918
1984	1	11545	13041	10826	12315	84939	84939	109982	125259	527644	509909
1984	2	19386	11662	9645	10983	92916	92916	114863	121111	509807	499796
1984	3	26183	21539	10919	12558	101924	101924	126429	128874	486078	480714
1984	4	17455	17455	5386	7770	101823	101823	130934	130993	479068	473706
1984	5	4196	4137	13549	13549	108101	105122	136701	136701	537705	537711
1984	6	18921	18921	12116	13806	111900	106897	147928	146837	537003	537003
1984	7	9004	9004	0	0	90976	81822	123274	136928	537439	537439
1984	8	4521	9125	0	4581	66644	58679	101578	123403	538163	538163
1984	9	8139	19117	1582	12505	54787	54792	91632	116206	539178	533849
1985	10	15073	17464	10185	12564	57874	57874	85754	111127	537988	530269
1985	11	9665	11313	8840	10479	64935	64935	83513	108872	535296	525931
1985	12	23915	15829	12795	14434	75941	75941	90910	106573	514553	513272
1985	1	23403	13152	10825	12315	84939	84939	99906	103875	493609	502580
1985	2	27824	22948	9639	10977	92916	92916	114866	114865	467468	481315
1985	3	26183	26183	10919	12558	101924	101924	126538	127357	443337	457178
1985	4	17455	17455	10795	13137	106210	106210	122126	123582	461589	475422
1985	5	30606	30606	8107	11040	104298	104298	133973	135557	537722	537709
1985	6	28629	28629	11026	14751	97361	97361	133955	139280	537003	537003
1985	7	5879	10072	568	4740	77632	77632	116089	127313	537439	537439

TABLE B-2 Summary of WGFP Model Runs - Existing Conditions Run

WGFP Bestsm modeling results

(1) WGFP Existing Conditions run

(2) WGFP Existing Cond w/ NISP Operations-Substitute water in-lieu of HT releases to Poudre; 40 cfs pipeline to HT

Month 10 = October

Units: Ac-ft

		Adams Tunnel		Unit 3 Pumping		EOM - Carter Lake		EOM - Horsetooth		EOM-Granby	
WY	Month	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run
1985	8	8567	12011	1732	5127	58420	58420	100033	117647	534051	530609
1985	9	12640	15635	6659	9603	54736	54736	92120	110669	524227	517792
1986	10	10881	13277	7830	10201	57848	57848	88011	106550	520633	511803
1986	11	9368	11016	8702	10265	64758	64758	86020	104548	518619	508142
1986	12	20399	15117	12808	14447	75942	75942	90909	102535	500603	495406
1986	1	22687	12783	10659	12149	84939	84939	99906	100184	479686	484393
1986	2	27317	26150	9494	10832	92916	92916	114866	114866	456672	462545
1986	3	26183	26183	10754	12394	101924	101924	127144	127964	434306	440178
1986	4	17455	17455	3024	5365	101212	101212	131478	129914	457756	463624
1986	5	32345	30090	12251	15184	104300	104300	135954	136273	537719	537721
1986	6	13896	13896	15937	15937	107791	104068	144594	144912	537003	537003
1986	7	5114	5114	0	0	87214	79335	127974	134906	537439	537439
1986	8	6343	6343	0	0	70086	58814	111873	126543	538163	538163
1986	9	4052	10522	0	6438	62564	54792	103490	120411	539178	534685
1987	10	6380	16564	3012	13145	57871	57874	98654	115570	539540	527331
1987	11	9595	11239	8843	10479	64935	64935	96411	113318	536230	522377
1987	12	13553	15200	12795	14434	75941	75941	94121	111020	523746	508241
1987	1	20054	13041	10825	12315	84939	84939	99905	108330	505032	496536
1987	2	27847	18492	9639	10977	92916	92916	114866	114864	478484	479343
1987	3	26183	26183	10919	12558	101924	101924	126628	127446	454336	455195
1987	4	17455	17455	10076	11854	106554	105961	123052	122926	458845	459703
1987	5	27988	27988	8529	12054	104298	104298	131904	135001	510197	511054
1987	6	27805	27805	7292	10970	97146	97146	142504	144595	537031	537031
1987	7	10727	14919	3942	8060	76523	76523	119718	131920	534352	530164
1987	8	7718	11163	2444	5807	57695	57719	104128	122012	530665	523040
1987	9	13954	16924	8210	11090	53901	53901	95283	114650	517684	507092
1988	10	14708	17104	9937	12255	57085	57125	89314	108674	503864	490878
1988	11	10640	12248	9790	11092	63349	63349	86016	105365	497477	482884
1988	12	22936	17054	14541	15882	74355	74355	90179	102028	476278	467562
1988	1	26226	14893	12572	13764	83809	83898	99176	99173	452244	454860
1988	2	30244	29189	10917	11868	92450	92450	114241	114313	423565	427235
1988	3	26183	26183	11548	13188	101755	101755	124463	125354	399844	403513
1988	4	17455	17455	3769	6111	101212	101212	128803	128581	410241	413908
1988	5	33818	33818	15222	16698	104300	102843	128629	131073	475749	479408
1988	6	32727	32727	7796	12928	96998	96998	138442	136744	537073	537068
1988	7	12516	16708	7130	11248	76690	76733	115237	122767	537439	535972
1988	8	16153	19554	5965	9293	57838	57896	94092	111493	524129	519265
1988	9	17188	20124	9968	12854	54119	54123	79406	102827	506993	499196
1989	10	18438	18546	10949	11021	57212	54940	72028	95440	488956	481052
1989	11	17455	15208	9991	13598	63349	63349	74286	91544	474077	468420
1989	12	33818	17666	14868	16209	74725	74976	88174	90178	441532	452029
1989	1	29071	25832	12534	13579	84584	84740	99477	99477	414080	427821
1989	2	30213	29570	10428	11611	92913	92915	114438	114438	385988	400371

TABLE B-2 Summary of WGFP Model Runs - Existing Conditions Run

WGFP Bestsm modeling results

(1) WGFP Existing Conditions run

(2) WGFP Existing Cond w/ NISP Operations-Substitute water in-lieu of HT releases to Poudre; 40 cfs pipeline to HT

Month 10 = October

Units: Ac-ft

		Adams Tunnel		Unit 3 Pumping		EOM - Carter Lake		EOM - Horsetooth		EOM-Granby	
WY	Month	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run
1989	3	26183	26183	11415	13053	101923	101923	123605	121968	362467	376844
1989	4	17455	17455	9852	12194	106291	106291	119395	116653	368453	382822
1989	5	33818	33818	13278	16107	104328	104225	114180	116393	390255	404592
1989	6	32727	32727	9377	13158	97017	97017	117808	118211	411380	425676
1989	7	33818	33818	11076	15195	76738	76738	99020	109745	391998	406259
1989	8	24708	13985	3285	6678	58008	58008	87058	88130	374918	399868
1989	9	27577	29494	17827	20772	54123	54123	77235	77234	348105	371123
1990	10	18546	18546	10906	10871	51375	48992	64260	64258	329801	352814
1990	11	17455	17455	12803	12505	61000	56986	64542	64541	314928	337939
1990	12	33818	33818	16555	21900	74769	74770	78302	72660	282791	305814
1990	1	33818	33818	11828	13020	84640	84640	96700	89573	249938	272975
1990	2	30545	30545	9792	11130	92915	92915	114175	105714	220552	243586
1990	3	26183	26183	10755	12394	101923	101923	127816	117721	197064	220086
1990	4	14532	17455	4031	6414	101815	101815	132276	122717	198348	218430
1990	5	28087	33329	11296	14229	104300	104300	136271	132847	220769	235554
1990	6	25569	31162	4091	7770	97146	97146	149009	147430	308677	317823
1990	7	5919	5922	0	-50	80688	76523	134340	136733	329184	338303
1990	8	3858	10392	0	6437	58828	57753	119562	128116	330921	333496
1990	9	12002	16075	6237	10213	53900	53901	111361	121694	322821	321323
1991	10	14144	16539	9874	12202	57182	57182	105373	115711	311507	307615
1991	11	10543	12191	9694	11035	63349	63349	102116	112448	305459	299920
1991	12	15406	17054	14541	15882	74355	74355	98823	109150	291055	283865
1991	1	17517	14893	12572	13764	84156	84156	99173	105395	275151	270581
1991	2	29882	22741	10565	11684	92528	92528	114438	114436	245998	248569
1991	3	26183	26183	11470	13110	101755	101755	124812	125630	221962	224532
1991	4	17455	17455	10166	12550	106647	106647	124355	122832	211551	214119
1991	5	33818	33818	8921	11854	104298	104298	134227	132510	262251	264811
1991	6	29306	29306	10680	14358	97002	97002	141049	137241	373960	376511
1991	7	18294	20672	7048	11166	76567	76567	113932	122777	379750	379920
1991	8	6482	8851	0	2292	58654	57584	93664	111403	383551	381355
1991	9	14405	18472	6783	10754	53687	53688	81316	102864	373722	367461
1992	10	18546	18546	14344	14268	56412	54030	75269	97513	355864	349605
1992	11	17455	15547	10298	13973	63307	63308	78203	94522	341975	337624
1992	12	30269	16835	14418	15717	74313	74313	90181	91489	313211	322296
1992	1	25675	23385	12448	13598	83311	83311	99176	99175	289038	300418
1992	2	30203	29236	11268	12267	91288	91288	114137	114137	259764	272110
1992	3	26183	26183	12542	13842	100296	100296	123563	124291	235771	248111
1992	4	17455	17455	10981	13323	106211	106211	122899	121492	238911	251241
1992	5	33818	33818	9237	12170	104298	104298	125591	129925	291050	303344
1992	6	32727	32727	5087	8765	96974	96974	140806	141544	329778	342032
1992	7	13410	17603	6919	11038	76567	76567	118723	129026	340765	348801
1992	8	10679	14124	4009	7371	57584	57584	101439	118906	337404	341984
1992	9	12597	15591	5694	8598	53688	53688	92993	111567	326591	328175

TABLE B-2 Summary of WGFP Model Runs - Existing Conditions Run

WGFP Bestsm modeling results

(1) WGFP Existing Conditions run

(2) WGFP Existing Cond w/ NISP Operations-Substitute water in-lieu of HT releases to Poudre; 40 cfs pipeline to HT

Month 10 = October

Units: Ac-ft

		Adams Tunnel		Unit 3 Pumping		EOM - Carter Lake		EOM - Horsetooth		EOM-Granby	
WY	Month	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run
1993	10	11842	14238	8920	11228	56960	56960	87856	106905	315564	314751
1993	11	11359	13007	9588	10887	63307	63307	85136	104173	307612	305152
1993	12	22776	16610	14255	15554	74313	74313	90179	101435	285935	289642
1993	1	25057	14418	12283	13441	83319	83319	99176	99173	262462	276813
1993	2	29646	29254	11110	12150	91653	91653	114137	114137	234890	249632
1993	3	26183	26183	12014	13356	101457	101457	124518	122879	210815	225549
1993	4	17455	17455	4249	6633	101467	101467	131672	127652	202053	216775
1993	5	30167	33818	12722	15655	104300	104300	136272	135989	293405	304437
1993	6	26711	30216	3847	7526	97051	97051	149009	149009	433293	440788
1993	7	6307	10500	1171	5289	76523	76523	125555	137984	491920	495209
1993	8	12049	15493	3617	6980	57584	57584	111213	129184	494895	494737
1993	9	11249	14244	5249	8153	53688	53688	103013	122612	489645	486493
1994	10	15803	18198	11301	13609	56776	56776	94591	115115	480056	474509
1994	11	11661	13309	10425	11725	63307	63307	90777	111290	472129	464935
1994	12	19232	17616	14909	16209	74313	74313	90178	107434	454640	449059
1994	1	27442	15451	12945	14095	83311	83311	99176	103006	429230	435640
1994	2	30545	27055	11698	12696	91288	91288	112897	114135	400646	410546
1994	3	26183	26183	13036	14335	100296	100296	120570	122628	377197	387093
1994	4	17455	17455	11035	13377	106211	106211	117515	117308	384836	394726
1994	5	33818	33818	10619	13552	104298	104298	119351	120892	451851	461718
1994	6	32727	32727	12365	15810	96745	96512	114796	120005	498723	508565
1994	7	33818	33818	13242	17259	76568	76235	91457	108028	470326	480149
1994	8	33818	23039	9904	13599	57606	57607	82428	88237	439820	460393
1994	9	25206	22362	8953	11856	53688	53688	77240	77234	415915	439316
1995	10	18546	18546	14724	14648	56113	53730	70600	70594	400077	423472
1995	11	17455	17455	10760	12681	63307	61553	72795	70528	386002	409396
1995	12	33818	33818	14582	17630	74313	74314	87257	81604	353773	377178
1995	1	30488	33818	12614	13763	83311	83311	99176	95351	325040	345124
1995	2	30545	30545	11408	12406	91288	91288	112023	106862	296557	316639
1995	3	26183	26183	12707	14006	100296	100296	120614	113817	273194	293266
1995	4	17455	17455	13053	14684	106211	105499	116133	107673	263719	283777
1995	5	27131	32438	7948	11590	104298	104298	136281	129420	287405	302107
1995	6	2821	2821	15937	15890	110136	106413	155737	151719	476121	490776
1995	7	4326	4326	15791	16168	108185	100736	150227	149205	537496	537480
1995	8	10183	10183	0	-65	75585	64739	115272	132590	538163	538163
1995	9	9667	19394	0	9603	57792	53683	97290	122887	533237	523512
1996	10	11581	18096	8438	14844	56775	56882	92646	118215	526178	509940
1996	11	10444	11984	9772	10965	63307	63307	89927	115482	520295	502518
1996	12	17926	16575	14255	15554	74313	74313	90178	112738	503775	487345
1996	1	25058	14418	12283	13450	83311	83328	99176	109651	482437	476641
1996	2	29668	20468	11123	12147	91518	92306	114137	114133	455289	458693
1996	3	26183	26183	12149	12704	101457	101457	124384	123528	429869	433272
1996	4	17455	17455	4500	6842	101212	101212	131287	128049	442389	445789

TABLE B-2 Summary of WGFP Model Runs - Existing Conditions Run

WGFP Bestsm modeling results

(1) WGFP Existing Conditions run

(2) WGFP Existing Cond w/ NISP Operations-Substitute water in-lieu of HT releases to Poudre; 40 cfs pipeline to HT

Month 10 = October

Units: Ac-ft

		Adams Tunnel		Unit 3 Pumping		EOM - Carter Lake		EOM - Horsetooth		EOM-Granby	
WY	Month	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run
1996	5	33818	33818	13313	16245	104300	104300	135100	132518	537712	537745
1996	6	26530	29013	3714	7294	97462	97317	149439	146784	537003	537003
1996	7	5508	5508	0	0	83724	79410	129836	136490	537439	537439
1996	8	6037	13806	163	7894	58678	58681	114457	128019	536249	528485
1996	9	9886	12878	5445	8422	54792	54792	105235	121634	532914	522162

TABLE B-3 Summary of WGFP Model Runs - WGFP EIS

WGFP Bestsm modeling results

(1) WGFP Existing Conditions run

(2) WGFP Existing Cond w/ NISP Operations-Substitute wa

Month 10 = October

Units: Ac-ft

		C-BT Demands		East Slope Yield	
WY	Month	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run
1950	10	19507	19507	0	0
1950	11	5199	5199	0	0
1950	12	5175	5175	0	0
1950	1	5428	5427	0	0
1950	2	4854	4854	0	0
1950	3	5506	5506	0	0
1950	4	10874	10874	0	0
1950	5	24686	24686	0	0
1950	6	26895	26895	0	0
1950	7	52792	52793	0	0
1950	8	52571	52571	0	0
1950	9	32852	32851	0	0
1951	10	17191	17191	0	0
1951	11	4620	4620	0	0
1951	12	4599	4599	0	0
1951	1	4819	4819	0	0
1951	2	4310	4310	0	0
1951	3	4892	4892	0	0
1951	4	9613	9613	0	0
1951	5	21746	21746	0	0
1951	6	23712	23712	0	0
1951	7	46402	46402	0	0
1951	8	46191	46191	0	0
1951	9	28903	28903	0	0
1952	10	12912	12912	0	0
1952	11	4127	4127	0	0
1952	12	4249	4249	0	0
1952	1	5080	5080	0	0
1952	2	5121	5122	0	0
1952	3	4321	4321	0	0
1952	4	10932	10933	0	0
1952	5	14640	14640	17429	17429
1952	6	14913	14913	14000	14000
1952	7	33392	33392	0	0
1952	8	50902	50902	0	0
1952	9	27071	27071	0	0
1953	10	18026	18026	0	0
1953	11	5134	5134	0	0
1953	12	5096	5096	0	0
1953	1	5423	5423	0	0
1953	2	4854	4854	0	0
1953	3	5506	5506	0	0
1953	4	10570	10570	0	0

TABLE B-3 Summary of WGFP Model Runs - WGFP EIS

WGFP Bestsm modeling results

(1) WGFP Existing Conditions run

(2) WGFP Existing Cond w/ NISP Operations-Substitute wa

Month 10 = October

Units: Ac-ft

		C-BT Demands		East Slope Yield	
WY	Month	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run
1953	5	22901	22900	0	0
1953	6	26484	26484	0	0
1953	7	48173	48173	0	0
1953	8	45315	45316	0	0
1953	9	31383	31383	0	0
1954	10	23123	23122	0	0
1954	11	6275	6275	0	0
1954	12	6228	6228	0	0
1954	1	6638	6638	0	0
1954	2	5942	5942	0	0
1954	3	6732	6732	0	0
1954	4	13280	13280	0	0
1954	5	32925	32924	0	0
1954	6	36037	36036	0	0
1954	7	65315	65316	0	0
1954	8	64175	64175	0	0
1954	9	39061	39061	0	0
1955	10	20670	20670	0	0
1955	11	6275	6275	0	0
1955	12	6228	6228	0	0
1955	1	6638	6638	0	0
1955	2	5942	5942	0	0
1955	3	6732	6732	0	0
1955	4	13330	13331	0	0
1955	5	43384	43384	0	0
1955	6	32656	32655	0	0
1955	7	64218	64218	0	0
1955	8	58520	58520	0	0
1955	9	41653	41653	0	0
1956	10	16674	16674	0	0
1956	11	4490	4490	0	0
1956	12	4530	4530	0	0
1956	1	4815	4815	0	0
1956	2	4310	4310	0	0
1956	3	4868	4868	0	0
1956	4	8871	8870	0	0
1956	5	20462	20462	0	0
1956	6	23120	23119	0	0
1956	7	50516	50516	0	0
1956	8	41308	41308	0	0
1956	9	34071	34071	0	0
1957	10	17547	17546	0	0
1957	11	4016	4016	0	0

TABLE B-3 Summary of WGFP Model Runs - WGFP EIS

WGFP Bestsm modeling results

(1) WGFP Existing Conditions run

(2) WGFP Existing Cond w/ NISP Operations-Substitute wa

Month 10 = October

Units: Ac-ft

		C-BT Demands		East Slope Yield	
WY	Month	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run
1957	12	4189	4189	0	0
1957	1	5076	5076	0	0
1957	2	5121	5122	0	0
1957	3	4300	4300	0	0
1957	4	10407	10407	0	0
1957	5	11590	11590	20221	20221
1957	6	12935	12935	31155	31155
1957	7	27098	27098	3619	3619
1957	8	49468	49468	0	0
1957	9	36783	36782	0	0
1958	10	20414	20414	0	0
1958	11	6640	6640	0	0
1958	12	6888	6888	0	0
1958	1	8239	8239	0	0
1958	2	8324	8324	0	0
1958	3	7007	7007	0	0
1958	4	13746	13746	0	0
1958	5	19570	19570	36991	36991
1958	6	28346	28346	11746	11746
1958	7	60857	60857	0	0
1958	8	73289	73289	0	0
1958	9	52488	52488	0	0
1959	10	20654	20654	0	0
1959	11	5134	5134	0	0
1959	12	5096	5096	0	0
1959	1	5423	5423	0	0
1959	2	4854	4854	0	0
1959	3	5506	5506	0	0
1959	4	10190	10190	0	0
1959	5	20396	20396	6907	6907
1959	6	25859	25859	2059	2059
1959	7	50926	50926	0	0
1959	8	56660	56660	0	0
1959	9	36488	36488	0	0
1960	10	17775	17775	0	0
1960	11	4563	4563	0	0
1960	12	4530	4530	0	0
1960	1	4815	4815	0	0
1960	2	4310	4310	0	0
1960	3	4892	4892	0	0
1960	4	9015	9015	0	0
1960	5	18135	18135	639	639
1960	6	21837	21837	1207	1207

TABLE B-3 Summary of WGFP Model Runs - WGFP EIS

WGFP Bestsm modeling results

(1) WGFP Existing Conditions run

(2) WGFP Existing Cond w/ NISP Operations-Substitute wa

Month 10 = October

Units: Ac-ft

		C-BT Demands		East Slope Yield	
WY	Month	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run
1960	7	43240	43241	0	0
1960	8	52859	52859	0	0
1960	9	31987	31987	0	0
1961	10	13446	13445	0	0
1961	11	4016	4016	0	0
1961	12	4189	4189	0	0
1961	1	5076	5076	0	0
1961	2	5121	5122	0	0
1961	3	4300	4300	0	0
1961	4	10407	10407	0	0
1961	5	11590	11590	6432	6432
1961	6	12839	12839	34149	34149
1961	7	33657	33656	0	0
1961	8	54307	54307	0	0
1961	9	29370	29369	0	0
1962	10	13791	13791	0	0
1962	11	4770	4770	0	0
1962	12	4813	4813	0	0
1962	1	5119	5119	0	0
1962	2	4582	4582	0	0
1962	3	5173	5173	0	0
1962	4	9448	9448	0	0
1962	5	22780	22780	0	0
1962	6	22757	22758	1733	1733
1962	7	55357	55357	0	0
1962	8	50657	50657	0	0
1962	9	32930	32930	0	0
1963	10	22542	22542	0	0
1963	11	6171	6171	0	0
1963	12	6228	6228	0	0
1963	1	6638	6638	0	0
1963	2	5942	5942	0	0
1963	3	6698	6698	0	0
1963	4	14611	14612	0	0
1963	5	50040	50040	0	0
1963	6	34739	34739	0	0
1963	7	62271	62271	0	0
1963	8	53104	53104	0	0
1963	9	37132	37132	0	0
1964	10	24381	24382	0	0
1964	11	5704	5705	0	0
1964	12	5662	5662	0	0
1964	1	6031	6031	0	0

TABLE B-3 Summary of WGFP Model Runs - WGFP EIS

WGFP Bestsm modeling results

(1) WGFP Existing Conditions run

(2) WGFP Existing Cond w/ NISP Operations-Substitute wa

Month 10 = October

Units: Ac-ft

		C-BT Demands		East Slope Yield	
WY	Month	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run
1964	2	5398	5398	0	0
1964	3	6119	6119	0	0
1964	4	11327	11327	0	0
1964	5	36498	36498	0	0
1964	6	29212	29212	0	0
1964	7	58609	58610	0	0
1964	8	54197	54197	0	0
1964	9	33738	33738	0	0
1965	10	14334	14334	0	0
1965	11	3993	3992	0	0
1965	12	3964	3963	0	0
1965	1	4207	4207	0	0
1965	2	3766	3766	0	0
1965	3	4279	4279	0	0
1965	4	8023	8023	0	0
1965	5	23564	23563	0	0
1965	6	19008	19008	16191	16191
1965	7	30393	30393	1177	1177
1965	8	44010	44010	0	0
1965	9	29154	29154	0	0
1966	10	19221	19221	0	0
1966	11	6171	6171	0	0
1966	12	6228	6228	0	0
1966	1	6638	6638	0	0
1966	2	5942	5942	0	0
1966	3	6698	6698	0	0
1966	4	12287	12287	0	0
1966	5	33983	33983	0	0
1966	6	42174	42174	0	0
1966	7	70799	70799	0	0
1966	8	63640	63641	0	0
1966	9	32265	32265	0	0
1967	10	18381	18381	0	0
1967	11	4490	4490	0	0
1967	12	4530	4530	0	0
1967	1	4815	4815	0	0
1967	2	4310	4310	0	0
1967	3	4868	4868	0	0
1967	4	8979	8979	0	0
1967	5	17757	17757	0	0
1967	6	22255	22255	4506	4506
1967	7	31146	31147	14256	14256
1967	8	61353	61353	0	0

TABLE B-3 Summary of WGFP Model Runs - WGFP EIS

WGFP Bestsm modeling results

(1) WGFP Existing Conditions run

(2) WGFP Existing Cond w/ NISP Operations-Substitute wa

Month 10 = October

Units: Ac-ft

		C-BT Demands		East Slope Yield	
WY	Month	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run
1967	9	34895	34895	0	0
1968	10	17156	17155	0	0
1968	11	3930	3930	0	0
1968	12	3964	3963	0	0
1968	1	4207	4207	0	0
1968	2	3766	3766	0	0
1968	3	4258	4258	0	0
1968	4	7686	7686	0	0
1968	5	15876	15876	58	57
1968	6	18936	18936	2191	2191
1968	7	44219	44219	0	0
1968	8	36244	36244	0	0
1968	9	28702	28702	0	0
1969	10	16248	16248	0	0
1969	11	4600	4600	0	0
1969	12	4789	4789	0	0
1969	1	5825	5825	0	0
1969	2	5889	5889	0	0
1969	3	4914	4914	0	0
1969	4	12452	12452	0	0
1969	5	12492	12492	13557	13557
1969	6	15294	15293	30055	30055
1969	7	40153	40153	840	839
1969	8	68069	68068	0	0
1969	9	27307	27307	0	0
1970	10	15968	15968	0	0
1970	11	4079	4078	0	0
1970	12	4189	4189	0	0
1970	1	5076	5076	0	0
1970	2	5121	5122	0	0
1970	3	4321	4321	0	0
1970	4	10891	10891	0	0
1970	5	10888	10888	572	572
1970	6	12240	12240	29515	29515
1970	7	33029	33029	626	625
1970	8	57891	57891	0	0
1970	9	24836	24836	0	0
1971	10	12078	12077	0	0
1971	11	4079	4078	0	0
1971	12	4189	4189	0	0
1971	1	5076	5076	0	0
1971	2	5121	5122	0	0
1971	3	4321	4321	0	0

TABLE B-3 Summary of WGFP Model Runs - WGFP EIS

WGFP Bestsm modeling results

(1) WGFP Existing Conditions run

(2) WGFP Existing Cond w/ NISP Operations-Substitute wa

Month 10 = October

Units: Ac-ft

		C-BT Demands		East Slope Yield	
WY	Month	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run
1971	4	10653	10653	0	0
1971	5	10922	10922	19721	19721
1971	6	12491	12491	16610	16609
1971	7	41940	41939	0	0
1971	8	55862	55862	0	0
1971	9	21964	21964	0	0
1972	10	19354	19354	0	0
1972	11	5050	5050	0	0
1972	12	5096	5096	0	0
1972	1	5423	5423	0	0
1972	2	4854	4854	0	0
1972	3	5478	5478	0	0
1972	4	10376	10376	0	0
1972	5	21370	21370	0	0
1972	6	27197	27197	0	0
1972	7	60871	60871	0	0
1972	8	54682	54682	0	0
1972	9	27619	27620	0	0
1973	10	19305	19305	0	0
1973	11	4673	4673	0	0
1973	12	4789	4789	0	0
1973	1	5825	5825	0	0
1973	2	5889	5889	0	0
1973	3	4938	4938	0	0
1973	4	12396	12396	0	0
1973	5	12549	12548	24477	24477
1973	6	14266	14266	14243	14243
1973	7	37620	37620	0	0
1973	8	64300	64300	0	0
1973	9	31481	31481	0	0
1974	10	19725	19725	0	0
1974	11	6275	6275	0	0
1974	12	6228	6228	0	0
1974	1	6638	6638	0	0
1974	2	5942	5942	0	0
1974	3	6732	6732	0	0
1974	4	12757	12757	0	0
1974	5	27803	27802	1764	1764
1974	6	30711	30711	3373	3373
1974	7	72096	72097	0	0
1974	8	71407	71407	0	0
1974	9	39727	39728	0	0
1975	10	22769	22770	0	0

TABLE B-3 Summary of WGFP Model Runs - WGFP EIS

WGFP Bestsm modeling results

(1) WGFP Existing Conditions run

(2) WGFP Existing Cond w/ NISP Operations-Substitute wa

Month 10 = October

Units: Ac-ft

		C-BT Demands		East Slope Yield	
WY	Month	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run
1975	11	5159	5159	0	0
1975	12	5096	5096	0	0
1975	1	5423	5423	0	0
1975	2	4854	4854	0	0
1975	3	5506	5506	0	0
1975	4	10446	10446	0	0
1975	5	24456	24456	530	530
1975	6	24333	24333	15077	15077
1975	7	44061	44061	0	0
1975	8	59547	59547	0	0
1975	9	35721	35721	0	0
1976	10	25728	25728	0	0
1976	11	6275	6275	0	0
1976	12	7095	7095	0	0
1976	1	6638	6638	0	0
1976	2	5942	5942	0	0
1976	3	6732	6732	0	0
1976	4	12950	12950	0	0
1976	5	26365	26365	0	0
1976	6	37511	37511	0	0
1976	7	67692	67693	0	0
1976	8	61595	61595	0	0
1976	9	41504	41504	0	0
1977	10	24689	24688	0	0
1977	11	6171	6171	0	0
1977	12	6228	6228	0	0
1977	1	6638	6638	0	0
1977	2	5942	5942	0	0
1977	3	6698	6698	0	0
1977	4	12728	12728	0	0
1977	5	33104	33104	0	0
1977	6	45351	45351	0	0
1977	7	64973	64973	0	0
1977	8	55013	55013	0	0
1977	9	38513	38513	0	0
1978	10	15107	15107	0	0
1978	11	3930	3930	0	0
1978	12	3964	3963	0	0
1978	1	4207	4207	0	0
1978	2	3766	3766	0	0
1978	3	4258	4258	0	0
1978	4	8008	8008	0	0
1978	5	15500	15500	0	0

TABLE B-3 Summary of WGFP Model Runs - WGFP EIS

WGFP Bestsm modeling results

(1) WGFP Existing Conditions run

(2) WGFP Existing Cond w/ NISP Operations-Substitute wa

Month 10 = October

Units: Ac-ft

		C-BT Demands		East Slope Yield	
WY	Month	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run
1978	6	18182	18182	7813	7813
1978	7	38470	38470	0	0
1978	8	47539	47539	0	0
1978	9	25763	25762	0	0
1979	10	16128	16128	0	0
1979	11	4031	4030	0	0
1979	12	4513	4513	0	0
1979	1	4207	4207	0	0
1979	2	3766	3766	0	0
1979	3	4279	4279	0	0
1979	4	7895	7895	0	0
1979	5	15688	15688	13296	13296
1979	6	18326	18326	11336	11336
1979	7	44848	44848	758	758
1979	8	38077	38077	0	0
1979	9	26871	26870	0	0
1980	10	16388	16388	0	0
1980	11	4673	4673	0	0
1980	12	4789	4789	0	0
1980	1	5825	5825	0	0
1980	2	5889	5889	0	0
1980	3	4938	4938	0	0
1980	4	12479	12478	0	0
1980	5	13637	13637	35657	35657
1980	6	15216	15215	33549	33549
1980	7	41998	41998	2327	2327
1980	8	60101	60101	0	0
1980	9	31956	31956	0	0
1981	10	26427	26427	0	0
1981	11	6949	6949	0	0
1981	12	6228	6228	0	0
1981	1	6638	6638	0	0
1981	2	5942	5942	0	0
1981	3	6732	6732	0	0
1981	4	12673	12673	0	0
1981	5	25829	25829	0	0
1981	6	35992	35992	0	0
1981	7	70228	70228	0	0
1981	8	62378	62378	0	0
1981	9	40027	40027	0	0
1982	10	22150	22150	0	0
1982	11	3930	3930	0	0
1982	12	3964	3963	0	0

TABLE B-3 Summary of WGFP Model Runs - WGFP EIS

WGFP Bestsm modeling results

(1) WGFP Existing Conditions run

(2) WGFP Existing Cond w/ NISP Operations-Substitute wa

Month 10 = October

Units: Ac-ft

		C-BT Demands		East Slope Yield	
WY	Month	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run
1982	1	4207	4207	0	0
1982	2	3766	3766	0	0
1982	3	4258	4258	0	0
1982	4	8391	8391	0	0
1982	5	18289	18288	0	0
1982	6	18432	18432	0	0
1982	7	38487	38486	0	0
1982	8	37160	37160	0	0
1982	9	25635	25634	0	0
1983	10	16669	16670	0	0
1983	11	3431	3431	0	0
1983	12	3589	3589	0	0
1983	1	4327	4327	0	0
1983	2	4354	4354	0	0
1983	3	3687	3687	0	0
1983	4	9030	9030	0	0
1983	5	9859	9859	22148	22148
1983	6	10959	10959	35216	35216
1983	7	25142	25141	18225	18225
1983	8	44500	44500	0	0
1983	9	23428	23428	0	0
1984	10	17008	17008	0	0
1984	11	4600	4600	0	0
1984	12	4795	4795	0	0
1984	1	5853	5853	0	0
1984	2	5891	5891	0	0
1984	3	4917	4917	0	0
1984	4	12081	12081	0	0
1984	5	13340	13340	22130	22130
1984	6	15856	15856	14049	14049
1984	7	52758	52758	0	0
1984	8	51728	51728	0	0
1984	9	28897	28897	0	0
1985	10	15408	15407	0	0
1985	11	4569	4569	0	0
1985	12	5166	5166	0	0
1985	1	4935	4935	0	0
1985	2	4315	4315	0	0
1985	3	4988	4988	0	0
1985	4	14546	14546	0	0
1985	5	20475	20474	3279	3279
1985	6	36953	36953	4099	4099
1985	7	41825	41826	0	0

TABLE B-3 Summary of WGFP Model Runs - WGFP EIS

WGFP Bestsm modeling results

(1) WGFP Existing Conditions run

(2) WGFP Existing Cond w/ NISP Operations-Substitute wa

Month 10 = October

Units: Ac-ft

		C-BT Demands		East Slope Yield	
WY	Month	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run
1985	8	41820	41820	0	0
1985	9	23185	23185	0	0
1986	10	11161	11161	0	0
1986	11	3965	3965	0	0
1986	12	3970	3969	0	0
1986	1	4207	4207	0	0
1986	2	3798	3798	0	0
1986	3	4358	4358	0	0
1986	4	11849	11849	0	0
1986	5	24246	24246	2458	2458
1986	6	19762	19762	20613	20613
1986	7	44202	44202	0	0
1986	8	38048	38048	0	0
1986	9	18962	18962	0	0
1987	10	12817	12816	0	0
1987	11	4490	4490	0	0
1987	12	4538	4538	0	0
1987	1	4815	4815	0	0
1987	2	4337	4337	0	0
1987	3	4898	4898	0	0
1987	4	13829	13828	0	0
1987	5	27517	27517	9487	9487
1987	6	26486	26485	5406	5406
1987	7	50824	50825	0	0
1987	8	39232	39231	0	0
1987	9	24251	24250	0	0
1988	10	15550	15550	0	0
1988	11	5100	5100	0	0
1988	12	5138	5138	0	0
1988	1	5444	5444	0	0
1988	2	4863	4863	0	0
1988	3	5566	5566	0	0
1988	4	11655	11655	0	0
1988	5	27742	27742	0	0
1988	6	26585	26584	0	0
1988	7	53032	53031	0	0
1988	8	53285	53285	0	0
1988	9	33410	33410	0	0
1989	10	20892	20892	0	0
1989	11	6516	6516	0	0
1989	12	6301	6301	0	0
1989	1	6670	6670	0	0
1989	2	5943	5943	0	0

TABLE B-3 Summary of WGFP Model Runs - WGFP EIS

WGFP Bestsm modeling results

(1) WGFP Existing Conditions run

(2) WGFP Existing Cond w/ NISP Operations-Substitute wa

Month 10 = October

Units: Ac-ft

		C-BT Demands		East Slope Yield	
WY	Month	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run
1989	3	7131	7131	0	0
1989	4	15325	15325	0	0
1989	5	37502	37502	0	0
1989	6	32869	32869	0	0
1989	7	75161	75162	0	0
1989	8	52694	52694	0	0
1989	9	39023	39023	0	0
1990	10	28170	28170	0	0
1990	11	4921	4921	0	0
1990	12	3978	3977	0	0
1990	1	4210	4210	0	0
1990	2	3767	3767	0	0
1990	3	4261	4261	0	0
1990	4	7917	7917	0	0
1990	5	18833	18833	489	489
1990	6	18319	18319	1566	1566
1990	7	33873	33873	0	0
1990	8	37607	37607	0	0
1990	9	22773	22773	0	0
1991	10	14988	14988	0	0
1991	11	5050	5050	0	0
1991	12	5096	5096	0	0
1991	1	5423	5423	0	0
1991	2	4858	4858	0	0
1991	3	5491	5491	0	0
1991	4	11336	11336	0	0
1991	5	22938	22938	0	0
1991	6	29788	29787	3421	3421
1991	7	68931	68931	0	0
1991	8	41676	41676	0	0
1991	9	29163	29162	0	0
1992	10	14397	14396	0	0
1992	11	4958	4957	0	0
1992	12	4552	4552	0	0
1992	1	4840	4840	0	0
1992	2	4314	4314	0	0
1992	3	4877	4877	0	0
1992	4	9091	9091	0	0
1992	5	29674	29673	0	0
1992	6	21354	21355	0	0
1992	7	53498	53498	0	0
1992	8	43890	43890	0	0
1992	9	22426	22426	0	0

TABLE B-3 Summary of WGFP Model Runs - WGFP EIS

WGFP Bestsm modeling results

(1) WGFP Existing Conditions run

(2) WGFP Existing Cond w/ NISP Operations-Substitute wa

Month 10 = October

Units: Ac-ft

		C-BT Demands		East Slope Yield	
WY	Month	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run
1993	10	11665	11665	0	0
1993	11	5060	5060	0	0
1993	12	3999	3999	0	0
1993	1	4208	4208	0	0
1993	2	3766	3766	0	0
1993	3	4261	4261	0	0
1993	4	7677	7677	0	0
1993	5	19459	19459	0	0
1993	6	18424	18424	615	615
1993	7	46992	46992	0	0
1993	8	42269	42269	0	0
1993	9	20820	20820	0	0
1994	10	18847	18847	0	0
1994	11	6376	6376	0	0
1994	12	6229	6229	0	0
1994	1	6642	6642	0	0
1994	2	5943	5943	0	0
1994	3	6705	6705	0	0
1994	4	12395	12396	0	0
1994	5	30559	30559	0	0
1994	6	40947	40947	0	0
1994	7	80429	80429	0	0
1994	8	58866	58866	0	0
1994	9	31730	31730	0	0
1995	10	14975	14975	0	0
1995	11	5185	5185	0	0
1995	12	5391	5391	0	0
1995	1	6588	6588	0	0
1995	2	6686	6686	0	0
1995	3	5535	5535	0	0
1995	4	13606	13606	0	0
1995	5	15085	15085	6324	6324
1995	6	16659	16659	45401	45401
1995	7	32691	32691	24146	24146
1995	8	79501	79501	0	0
1995	9	42703	42703	0	0
1996	10	11371	11371	0	0
1996	11	3959	3959	0	0
1996	12	3966	3965	0	0
1996	1	4208	4208	0	0
1996	2	3769	3769	0	0
1996	3	4260	4260	0	0
1996	4	7677	7677	0	0

TABLE B-3 Summary of WGFP Model Runs - WGFP EIS

WGFP Bestsm modeling results

(1) WGFP Existing Conditions run

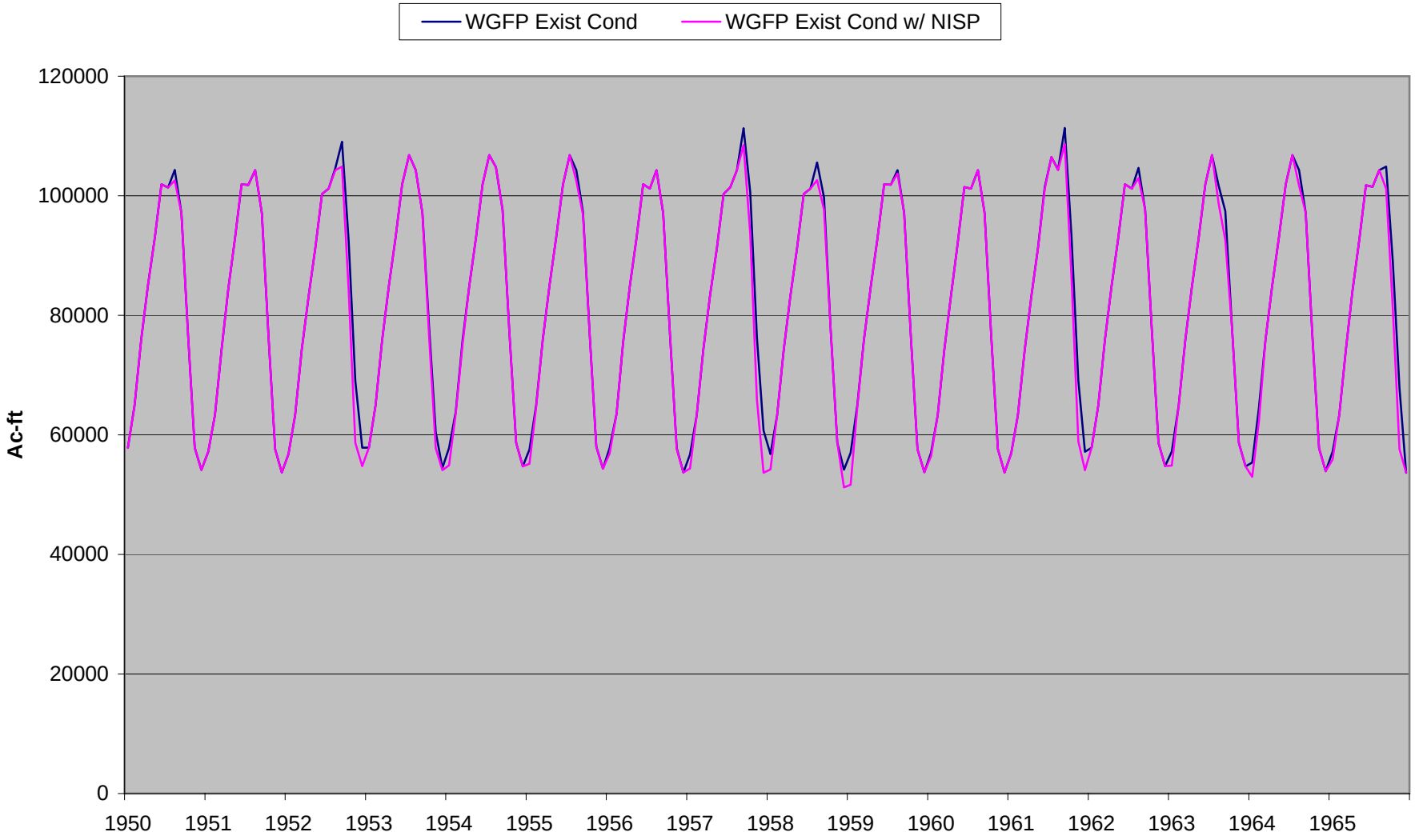
(2) WGFP Existing Cond w/ NISP Operations-Substitute wa

Month 10 = October

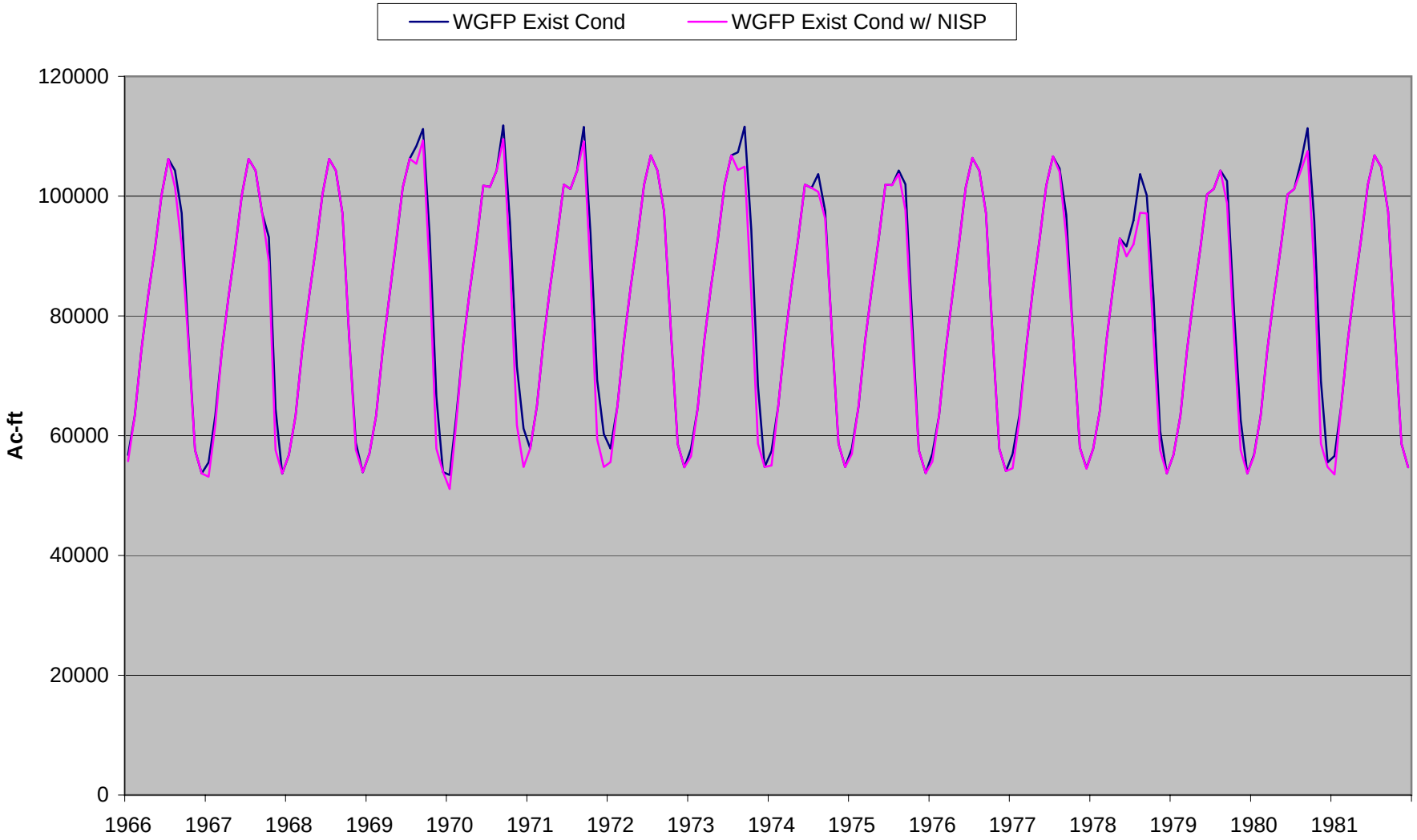
Units: Ac-ft

		C-BT Demands		East Slope Yield	
WY	Month	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run	WGFP-Existing Cond	WGFP-Existing Cond w/ NISP Run
1996	5	23616	23616	0	0
1996	6	19956	19956	3714	3714
1996	7	37192	37193	0	0
1996	8	46743	46742	0	0
1996	9	21983	21983	0	0

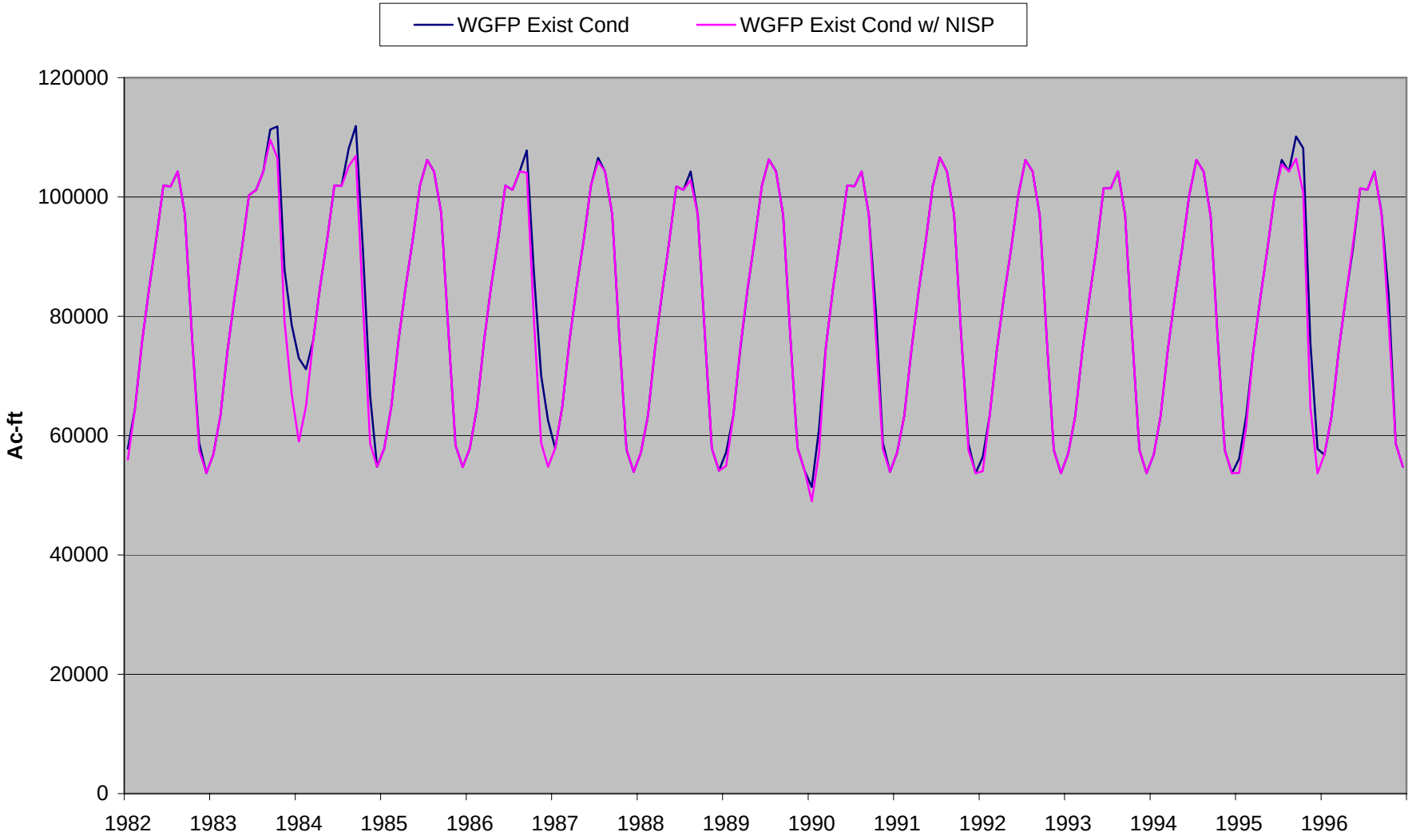
CARTER LAKE
1950-1965



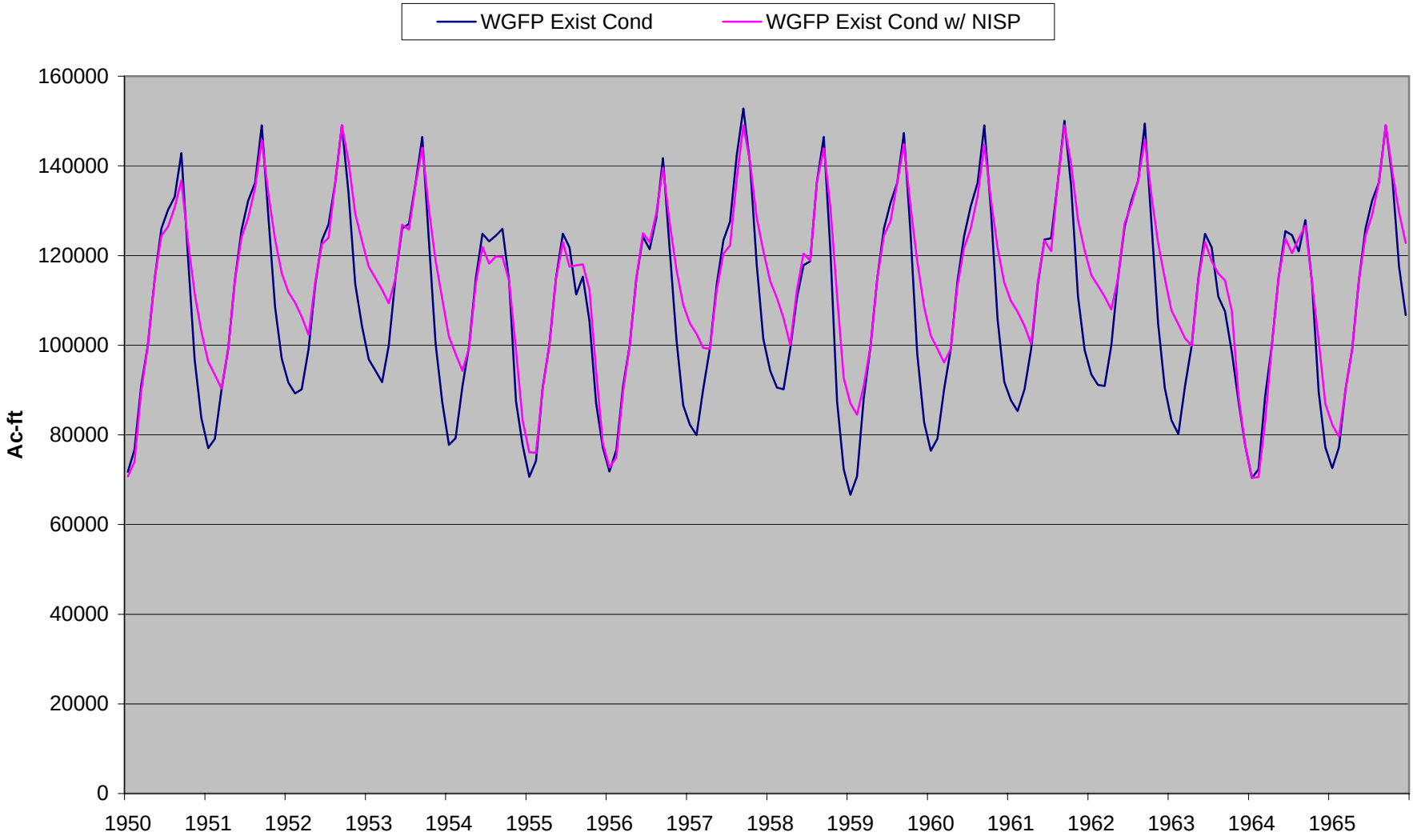
CARTER LAKE
1966-1981



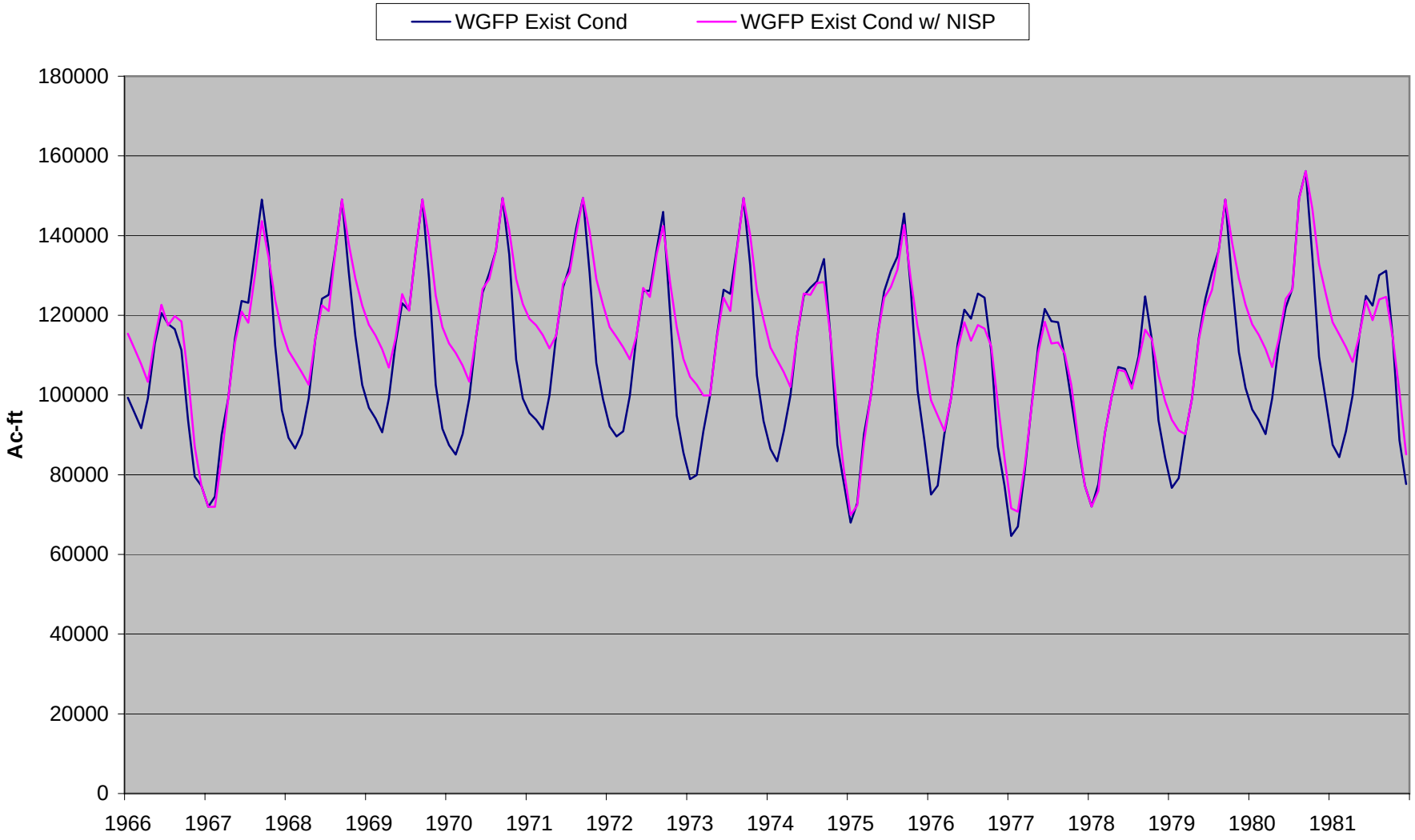
CARTER LAKE
1982-1996



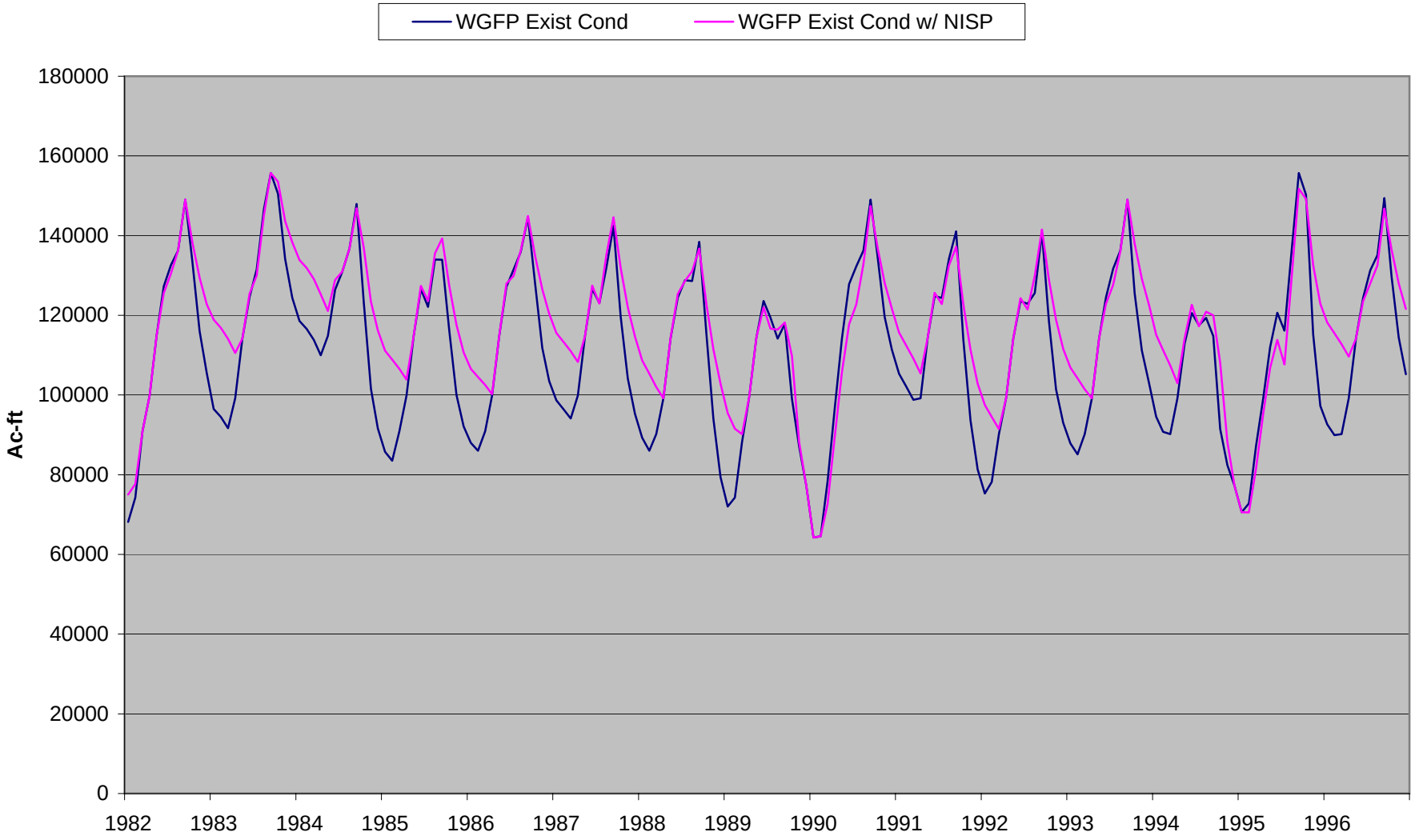
HORSETOOTH RESERSVOIR
1950-1965



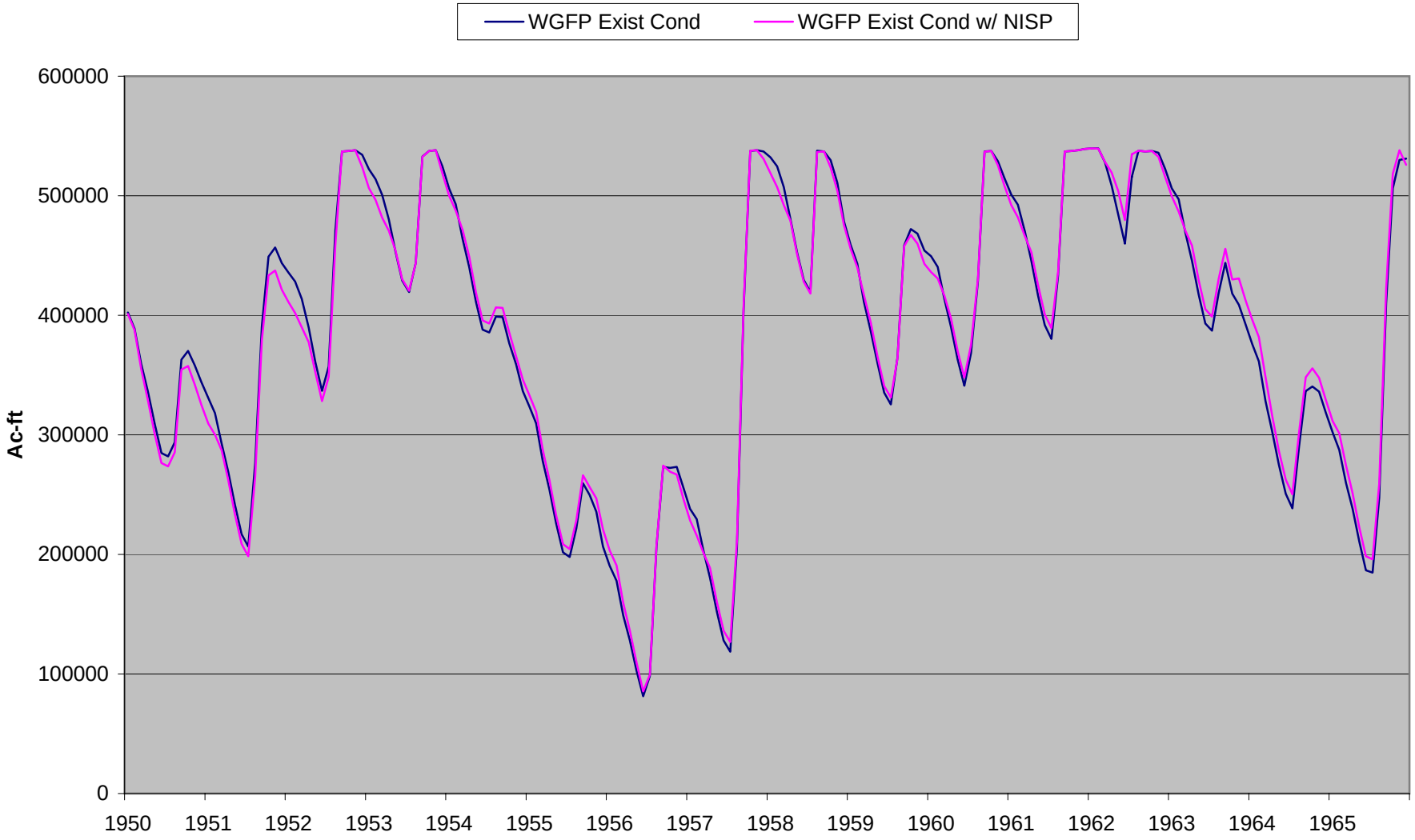
HORSETOOTH RESERSVOIR
1966-1981



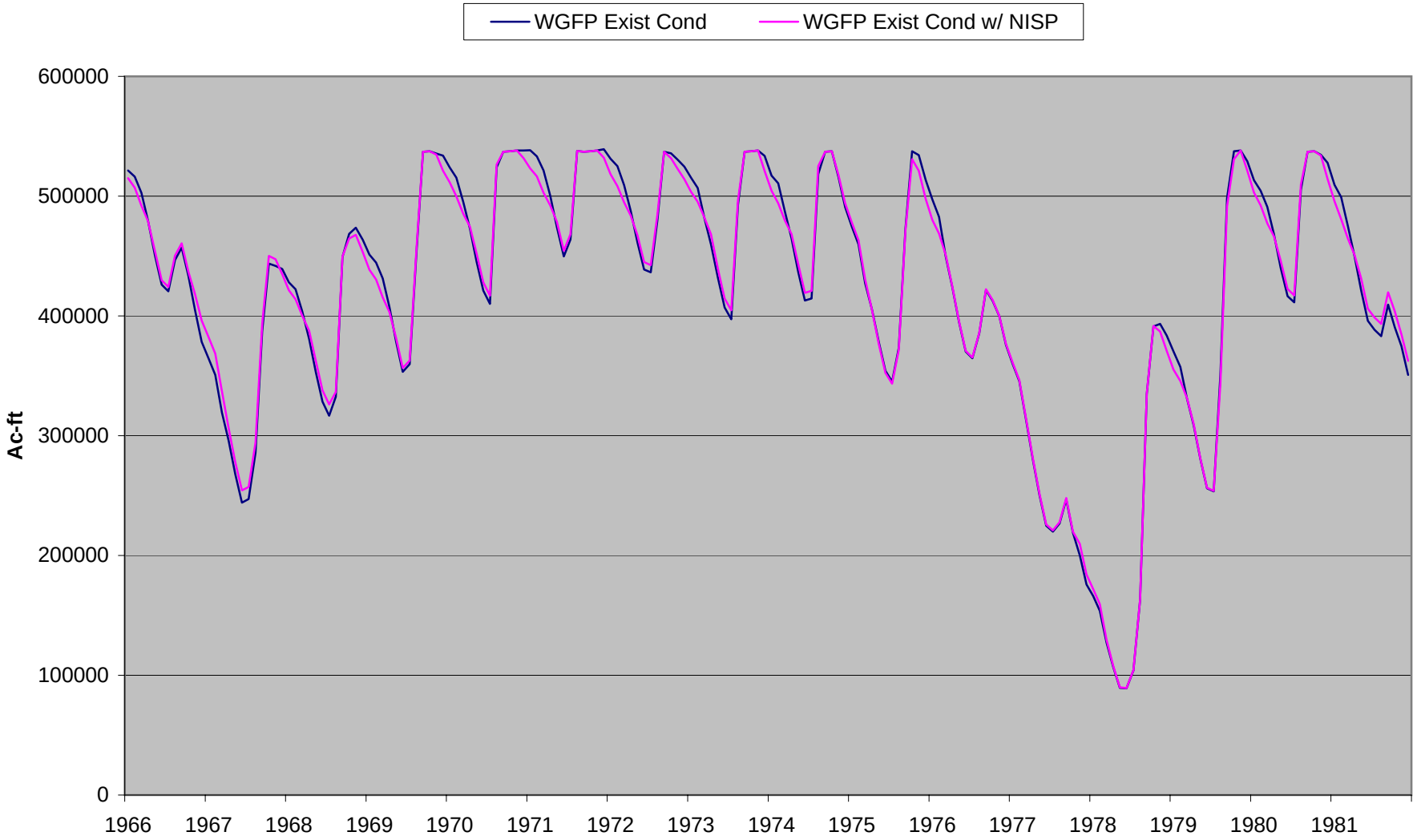
HORSETOOTH RESERVOIR
1982-1996



Lake Granby Reservior
1950-1965



Lake Granby Reservior
1966-1981



Lake Granby Reservior
1982-1996

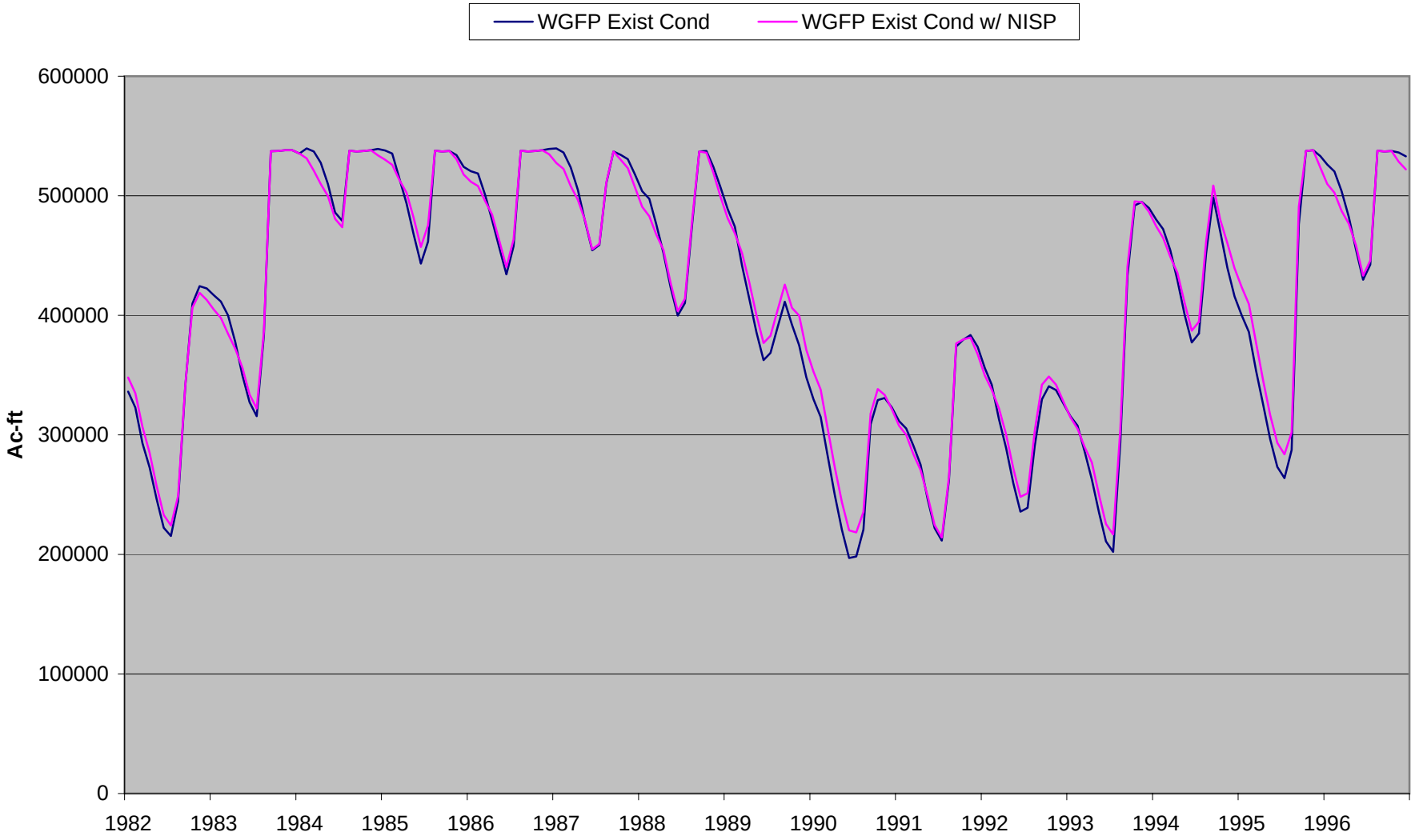


TABLE B-4

NISP RES TO HORSETOOTH (AC-FT)

WGFP Existing Cond w/ NISP Operations

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1950	0	0	0	0	0	0	0	0	0	0	0	0	0
1951	0	0	0	0	0	0	0	0	0	0	0	0	0
1952	0	0	0	0	2301	226	0	0	0	0	0	0	2527
1953	0	0	0	0	2221	2460	0	0	0	0	0	0	4681
1954	0	0	0	0	0	0	0	0	0	0	0	0	0
1955	0	0	0	0	0	0	0	0	0	0	0	0	0
1956	0	0	0	0	0	0	0	0	0	0	0	0	0
1957	0	0	0	2265	0	0	0	0	0	0	0	0	2265
1958	0	0	0	0	2221	2460	0	0	0	0	0	0	4681
1959	0	0	0	0	0	0	0	0	0	0	0	0	0
1960	0	0	0	0	0	0	0	0	0	0	0	0	0
1961	0	0	0	0	2221	1039	0	0	0	0	0	0	3260
1962	0	0	0	0	2221	2460	0	0	0	0	0	0	4681
1963	0	0	0	1965	0	0	0	0	0	0	0	0	1965
1964	0	0	0	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	0	2221	2460	0	0	0	0	0	0	4681
1967	0	0	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	361	0	0	0	0	0	0	0	361
1969	0	0	0	0	2221	2460	0	0	0	0	0	0	4681
1970	0	0	0	0	2221	2460	0	0	0	0	0	0	4681
1971	0	0	0	0	2221	2460	0	0	0	0	0	0	4681
1972	0	0	0	0	2301	2460	0	0	0	0	0	0	4761
1973	0	0	0	531	0	0	0	0	0	0	0	0	531
1974	0	0	0	0	2221	2232	0	0	0	0	0	0	4453
1975	0	0	0	0	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0	0	0	0	0	0
1979	0	0	1836	2228	0	0	0	0	0	0	0	0	4064
1980	0	0	0	0	2301	2460	0	0	0	0	0	0	4761
1981	0	0	0	0	2221	350	0	0	0	0	0	0	2571
1982	0	0	0	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	2221	2460	0	0	0	0	0	0	4681
1984	0	0	0	0	0	2460	0	0	0	0	0	0	2460
1985	0	0	0	0	2221	2460	0	0	0	0	0	0	4681
1986	0	0	0	0	2221	2460	0	0	0	0	0	0	4681
1987	0	0	0	0	2221	2460	0	0	0	0	0	0	4681
1988	0	0	0	917	2301	2460	0	0	0	0	0	0	5678
1989	0	0	2460	2460	1823	0	0	0	0	0	0	0	6743
1990	0	0	0	0	0	0	0	0	0	0	0	0	0
1991	0	0	0	0	2221	2460	0	0	0	0	0	0	4681
1992	0	0	0	2460	2301	2367	0	0	0	0	0	0	7128
1993	0	0	0	820	1731	0	0	0	0	0	0	0	2551
1994	0	0	0	0	2221	2460	0	0	0	0	0	0	4681
1995	0	0	0	0	0	0	0	0	0	0	0	0	0
1996	0	0	0	0	0	0	0	0	0	0	0	0	0
Average	0	0	91	290	1084	1022	0	0	0	0	0	0	2488
Max	0	0	2460	2460	2301	2460	0	0	0	0	0	0	7128
Min	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE B-5
NISP RES TO POUDRE (AC-FT)
WGFP Existing Cond w/ NISP Operations

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1950	0	0	0	0	0	0	253	2626	1671	9388	11370	4482	29790
1951	7	0	0	0	0	0	222	2300	1461	8214	9950	3920	26074
1952	1203	0	0	0	0	0	188	1969	1255	7041	8528	3359	23543
1953	1605	0	0	0	0	0	253	2626	1671	9388	11370	4482	31395
1954	1175	0	0	0	0	0	314	3283	2090	11737	12372	0	30971
1955	0	0	0	0	0	0	0	11844	1272	8804	7875	0	29795
1956	0	0	0	0	0	0	0	2359	529	8229	9463	6720	27300
1957	233	0	0	0	0	0	0	0	0	4106	9951	9256	23546
1958	309	0	0	0	0	0	0	47	2026	12164	16787	264	31597
1959	0	0	0	0	0	0	0	0	1854	8368	14544	5030	29796
1960	0	0	0	0	0	0	0	0	340	6610	13452	6091	26493
1961	48	0	0	0	0	0	0	0	0	5816	12175	5508	23547
1962	14	0	0	0	0	0	0	1584	40	9675	11626	6489	29428
1963	19	0	0	0	0	0	1130	8150	3655	11119	5745	0	29818
1964	0	0	0	0	0	0	0	7065	2263	8861	11327	281	29797
1965	0	0	0	0	0	0	0	6954	468	1457	10602	3911	23392
1966	19	0	0	0	0	0	0	3734	4948	12502	10317	0	31520
1967	0	0	0	0	0	0	0	703	1782	3020	13538	8370	27413
1968	2019	0	0	0	0	0	0	1164	569	6841	7506	5446	23545
1969	881	0	0	0	0	0	0	0	1207	10024	12265	3092	27469
1970	12	0	0	0	0	0	0	0	0	5961	14104	3469	23546
1971	11	0	0	0	0	0	0	0	0	10283	10629	2621	23544
1972	1260	0	0	0	0	0	0	1924	1353	10978	14464	1413	31392
1973	2163	0	0	0	0	0	0	0	0	7448	13683	4175	27469
1974	37	0	0	0	0	0	0	1332	24	15946	12495	0	29834
1975	0	0	0	0	0	0	0	3087	407	5332	13372	4006	26204
1976	3589	0	0	0	0	0	0	527	3711	13228	12327	0	33382
1977	0	0	0	0	0	0	0	2956	6445	10838	9557	0	29796
1978	0	0	0	0	0	0	0	0	0	8821	11278	2795	22894
1979	2838	0	0	0	0	0	0	0	0	9967	8388	2351	23544
1980	591	0	0	0	0	0	0	0	373	12019	11045	3442	27470
1981	4083	0	0	0	0	0	0	520	3203	13879	11840	354	33879
1982	0	0	0	0	0	0	0	670	199	4862	8488	3765	17984
1983	5162	0	0	0	0	0	0	0	0	3574	6489	4396	19621
1984	1365	0	0	0	0	0	0	0	594	14613	8133	2764	27469
1985	820	0	0	0	0	0	2991	3079	7399	5863	6360	958	27470
1986	11	0	0	0	0	0	0	7034	0	6556	7686	2257	23544
1987	13	0	0	0	0	0	840	6731	2695	10029	5660	1502	27470
1988	15	0	0	0	0	0	1259	4149	1027	9144	9805	5997	31396
1989	19	0	0	0	0	0	1264	7753	2002	14364	4415	0	29817
1990	0	0	0	0	0	0	0	3850	0	3933	6112	1775	15670
1991	15	0	0	0	0	0	42	2757	1613	14320	8839	3808	31394
1992	715	0	0	0	0	0	246	8638	135	9483	7127	1129	27473
1993	491	0	0	0	0	0	0	3052	514	12321	5523	1642	23543
1994	939	0	0	0	0	0	120	4683	7097	15308	3715	0	31862
1995	0	0	0	0	0	0	0	0	0	3387	18174	8234	29795
1996	0	0	0	0	0	0	0	3596	1020	9220	6862	1013	21711
Average	674	0	0	0	0	0	194	2612	1466	9043	10156	2991	27136
Max	5162	0	0	0	0	0	2991	11844	7399	15946	18174	9256	33879
Min	0	0	0	0	0	0	0	0	0	1457	3715	0	15670

TABLE B-6
HORSETOOTH TO POUDRE (AC-FT)
WGFP Existing Cond w/ NISP Operations

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1950	1605	0	0	0	0	0	0	0	0	0	0	0	1605
1951	1397	0	0	0	0	0	0	0	0	0	0	0	1397
1952	0	0	0	0	0	0	0	0	0	0	0	0	0
1953	0	0	0	0	0	0	0	0	0	0	0	0	0
1954	832	0	0	0	0	0	0	0	0	0	1840	5600	8272
1955	19	0	0	0	0	0	0	0	0	0	3932	5494	9445
1956	172	0	0	0	0	0	0	0	0	0	0	0	172
1957	0	0	0	0	0	0	0	0	0	0	0	0	0
1958	0	0	0	0	0	0	0	0	0	0	0	7642	7642
1959	73	0	0	0	0	0	0	0	0	0	0	1524	1597
1960	983	0	0	0	0	0	0	0	0	0	0	0	983
1961	0	0	0	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0	5281	4147	9428
1964	994	0	0	0	0	0	0	0	0	0	0	4531	5525
1965	153	0	0	0	0	0	0	0	0	0	0	0	153
1966	0	0	0	0	0	0	0	0	0	0	3787	3937	7724
1967	52	0	0	0	0	0	0	0	0	0	0	0	52
1968	0	0	0	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0	0	0	5103	4304	9407
1975	5187	0	0	0	0	0	0	0	0	0	0	0	5187
1976	2244	0	0	0	0	0	0	0	0	0	408	3208	5860
1977	4866	0	0	0	0	0	0	0	0	0	125	4457	9448
1978	651	0	0	0	0	0	0	0	0	0	0	0	651
1979	0	0	0	0	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0	0	0	5364	5364
1982	5566	0	0	0	0	0	0	0	0	0	0	0	5566
1983	0	0	0	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0	0	0	0	0	0
1988	0	0	0	0	0	0	0	0	0	0	0	0	0
1989	0	0	0	0	0	0	0	0	0	0	7471	1956	9427
1990	7868	0	0	0	0	0	0	0	0	0	0	0	7868
1991	0	0	0	0	0	0	0	0	0	0	0	0	0
1992	0	0	0	0	0	0	0	0	0	0	0	0	0
1993	0	0	0	0	0	0	0	0	0	0	0	0	0
1994	0	0	0	0	0	0	0	0	0	0	5865	1521	7386
1995	1002	0	0	0	0	0	0	0	0	0	0	597	1599
1996	11	0	0	0	0	0	0	0	0	0	0	0	11
Average	716	0	0	0	0	0	0	0	0	0	719	1155	2591
Max	7868	0	0	0	0	0	0	0	0	0	7471	7642	9448
Min	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE A-4
NISP RES TO HORSETOOTH (AC-FT)
WGFP EIS w/ NISP Operations

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1950	0	0	0	0	0	0	0	0	0	0	0	0	0
1951	0	0	0	0	0	0	0	0	0	0	0	0	0
1952	0	0	0	2460	68	0	0	0	0	0	0	0	2528
1953	0	0	0	0	2221	2460	0	0	0	0	0	0	4681
1954	0	0	0	0	0	0	0	0	0	0	0	0	0
1955	0	0	0	0	0	0	0	0	0	0	0	0	0
1956	0	0	0	0	0	0	0	0	0	0	0	0	0
1957	0	2265	0	0	0	0	0	0	0	0	0	0	2265
1958	0	0	0	2460	2221	1493	0	0	0	0	0	0	6174
1959	0	0	0	0	0	0	0	0	0	0	0	0	0
1960	0	0	0	0	0	0	0	0	0	0	0	0	0
1961	0	0	0	2460	801	0	0	0	0	0	0	0	3261
1962	0	0	0	0	2221	2460	0	0	0	0	0	0	4681
1963	0	0	0	1965	0	0	0	0	0	0	0	0	1965
1964	0	0	0	0	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0	0	0	0	0
1966	0	0	0	2460	2221	1705	0	0	0	0	0	0	6386
1967	0	0	0	0	0	0	0	0	0	0	0	0	0
1968	0	0	0	361	0	0	0	0	0	0	0	0	361
1969	0	0	0	0	2221	2460	0	0	0	0	0	0	4681
1970	0	0	0	0	2221	2460	0	0	0	0	0	0	4681
1971	0	0	0	0	2221	2460	0	0	0	0	0	0	4681
1972	0	0	0	0	2301	2460	0	0	0	0	0	0	4761
1973	0	0	531	0	0	0	0	0	0	0	0	0	531
1974	0	0	0	0	2221	2231	0	0	0	0	0	0	4452
1975	0	0	0	0	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0	0	0	0	0	0
1979	0	2380	1685	0	0	0	0	0	0	0	0	0	4065
1980	0	0	0	0	2301	2460	0	0	0	0	0	0	4761
1981	0	0	0	0	2221	350	0	0	0	0	0	0	2571
1982	0	0	0	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	880	2221	2460	0	0	0	0	0	0	5561
1984	0	0	0	0	0	2460	0	0	0	0	0	0	2460
1985	0	0	0	0	2221	2460	0	0	0	0	0	0	4681
1986	0	0	0	2460	2221	2460	0	0	0	0	0	0	7141
1987	0	0	0	0	2221	2460	0	0	0	0	0	0	4681
1988	0	0	0	2460	2301	2460	0	0	0	0	0	0	7221
1989	0	0	1861	0	0	0	0	0	0	0	0	0	1861
1990	0	0	0	0	0	0	0	0	0	0	0	0	0
1991	0	0	0	2460	2221	2460	0	0	0	0	0	0	7141
1992	0	0	2460	2209	0	0	0	0	0	0	0	0	4669
1993	0	0	0	2460	91	0	0	0	0	0	0	0	2551
1994	0	0	0	2460	2221	1123	0	0	0	0	0	0	5804
1995	0	0	0	0	0	0	0	0	0	0	0	0	0
1996	0	0	0	0	0	0	0	0	0	0	0	0	0
Average	0	99	139	586	876	880	0	0	0	0	0	0	2580
Max	0	2380	2460	2460	2301	2460	0	0	0	0	0	0	7221
Min	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE A-5
NISP RES TO POUDRE (AC-FT)
WGFP EIS w/ NISP Operations

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1950	0	0	0	0	0	0	252	2626	1670	9388	11369	4479	29784
1951	7	0	0	0	0	0	219	2298	1461	8214	9950	3919	26068
1952	1203	0	0	0	0	0	188	1969	1255	7041	8528	3359	23543
1953	1603	0	0	0	0	0	252	2626	1670	9388	11369	4479	31387
1954	1176	0	0	0	0	0	314	3283	2090	11737	12371	0	30971
1955	0	0	0	0	0	0	0	11844	1272	8802	7876	0	29794
1956	0	0	0	0	0	0	0	2356	528	8228	9463	6719	27294
1957	231	0	0	0	0	0	0	0	0	4106	9951	9255	23543
1958	308	0	0	0	0	0	0	47	2026	12163	15559	0	30103
1959	0	0	0	0	0	0	0	0	1853	8367	14543	5029	29792
1960	0	0	0	0	0	0	0	0	340	6609	13451	6091	26491
1961	47	0	0	0	0	0	0	0	0	5814	12174	5507	23542
1962	14	0	0	0	0	0	0	1584	40	9675	11626	6488	29427
1963	19	0	0	0	0	0	1129	8149	3655	11119	5745	0	29816
1964	0	0	0	0	0	0	0	7065	2262	8859	11327	281	29794
1965	0	0	0	0	0	0	0	6953	468	1456	10602	3909	23388
1966	19	0	0	0	0	0	0	3733	4948	12501	8610	0	29811
1967	0	0	0	0	0	0	0	703	1781	3020	13538	8370	27412
1968	2017	0	0	0	0	0	0	1163	568	6841	7506	5446	23541
1969	881	0	0	0	0	0	0	0	1206	10024	12265	3092	27468
1970	12	0	0	0	0	0	0	0	0	5961	14104	3469	23546
1971	11	0	0	0	0	0	0	0	0	10283	10629	2621	23544
1972	1259	0	0	0	0	0	0	1923	1352	10977	14464	1412	31387
1973	2163	0	0	0	0	0	0	0	0	7447	13683	4175	27468
1974	37	0	0	0	0	0	0	1332	25	15945	12493	0	29832
1975	0	0	0	0	0	0	0	3087	407	5331	13372	4006	26203
1976	3588	0	0	0	0	0	0	527	3711	13228	12327	0	33381
1977	0	0	0	0	0	0	0	2955	6445	10837	9557	0	29794
1978	0	0	0	0	0	0	0	0	0	8819	11277	2794	22890
1979	2837	0	0	0	0	0	0	0	0	9967	8386	2351	23541
1980	590	0	0	0	0	0	0	0	372	12018	11045	3440	27465
1981	4083	0	0	0	0	0	0	520	3201	13879	11840	354	33877
1982	0	0	0	0	0	0	0	669	199	4859	8488	3764	17979
1983	5162	0	0	0	0	0	0	0	0	3573	6488	4396	19619
1984	1365	0	0	0	0	0	0	0	593	14612	8131	2764	27465
1985	818	0	0	0	0	0	2991	3079	7399	5862	6359	958	27466
1986	11	0	0	0	0	0	0	7034	0	6556	7685	2256	23542
1987	13	0	0	0	0	0	840	6729	2693	10029	5660	1500	27464
1988	15	0	0	0	0	0	1259	4149	1027	9142	9805	5997	31394
1989	19	0	0	0	0	0	1264	7752	2001	14363	4415	0	29814
1990	0	0	0	0	0	0	0	3850	0	3933	6112	1775	15670
1991	15	0	0	0	0	0	42	2755	1613	14320	8837	3807	31389
1992	715	0	0	0	0	0	245	8637	136	9483	7127	1129	27472
1993	491	0	0	0	0	0	0	3051	512	12320	5523	1642	23539
1994	938	0	0	0	0	0	121	4682	7096	15307	2590	0	30734
1995	0	0	0	0	0	0	0	0	0	3386	18174	8233	29793
1996	0	0	0	0	0	0	0	3595	1020	9220	6862	2834	23531
Average	674	0	0	0	0	0	194	2611	1466	9043	10069	3023	27080
Max	5162	0	0	0	0	0	2991	11844	7399	15945	18174	9255	33877
Min	0	0	0	0	0	0	0	0	0	1456	2590	0	15670

TABLE A-6
HORSETOOTH TO POUDRE (AC-FT)
WGFP EIS w/ NISP Operations

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
1950	1603	0	0	0	0	0	0	0	0	0	0	0	1603
1951	1396	0	0	0	0	0	0	0	0	0	0	0	1396
1952	0	0	0	0	0	0	0	0	0	0	0	0	0
1953	0	0	0	0	0	0	0	0	0	0	0	0	0
1954	831	0	0	0	0	0	0	0	0	0	1840	5599	8270
1955	19	0	0	0	0	0	0	0	0	0	3932	5494	9445
1956	171	0	0	0	0	0	0	0	0	0	0	0	171
1957	0	0	0	0	0	0	0	0	0	0	0	0	0
1958	0	0	0	0	0	0	0	0	0	0	1228	7906	9134
1959	73	0	0	0	0	0	0	0	0	0	0	1524	1597
1960	983	0	0	0	0	0	0	0	0	0	0	0	983
1961	0	0	0	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0	0	5281	4147	9428
1964	993	0	0	0	0	0	0	0	0	0	0	4529	5522
1965	153	0	0	0	0	0	0	0	0	0	0	0	153
1966	0	0	0	0	0	0	0	0	0	0	5493	3937	9430
1967	52	0	0	0	0	0	0	0	0	0	0	0	52
1968	0	0	0	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0	0	0	5104	4304	9408
1975	5184	0	0	0	0	0	0	0	0	0	0	0	5184
1976	2244	0	0	0	0	0	0	0	0	0	407	3206	5857
1977	4865	0	0	0	0	0	0	0	0	0	125	4456	9446
1978	651	0	0	0	0	0	0	0	0	0	0	0	651
1979	0	0	0	0	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0	0	0	5363	5363
1982	5564	0	0	0	0	0	0	0	0	0	0	0	5564
1983	0	0	0	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0	0	0	0	0	0
1988	0	0	0	0	0	0	0	0	0	0	0	0	0
1989	0	0	0	0	0	0	0	0	0	0	7470	1955	9425
1990	7868	0	0	0	0	0	0	0	0	0	0	0	7868
1991	0	0	0	0	0	0	0	0	0	0	0	0	0
1992	0	0	0	0	0	0	0	0	0	0	0	0	0
1993	0	0	0	0	0	0	0	0	0	0	0	0	0
1994	0	0	0	0	0	0	0	0	0	0	6988	1520	8508
1995	1001	0	0	0	0	0	0	0	0	0	0	597	1598
1996	11	0	0	0	0	0	0	0	0	0	0	0	11
Average	716	0	0	0	0	0	0	0	0	0	806	1160	2682
Max	7868	0	0	0	0	0	0	0	0	0	7470	7906	9446
Min	0	0	0	0	0	0	0	0	0	0	0	0	0

Appendix D

Cactus Hill Reservoir (Alternative 3)

Figure D1. Cactus Hill Reservoir EOM Water Surface Area, Alternative 3, IY 1950-2005

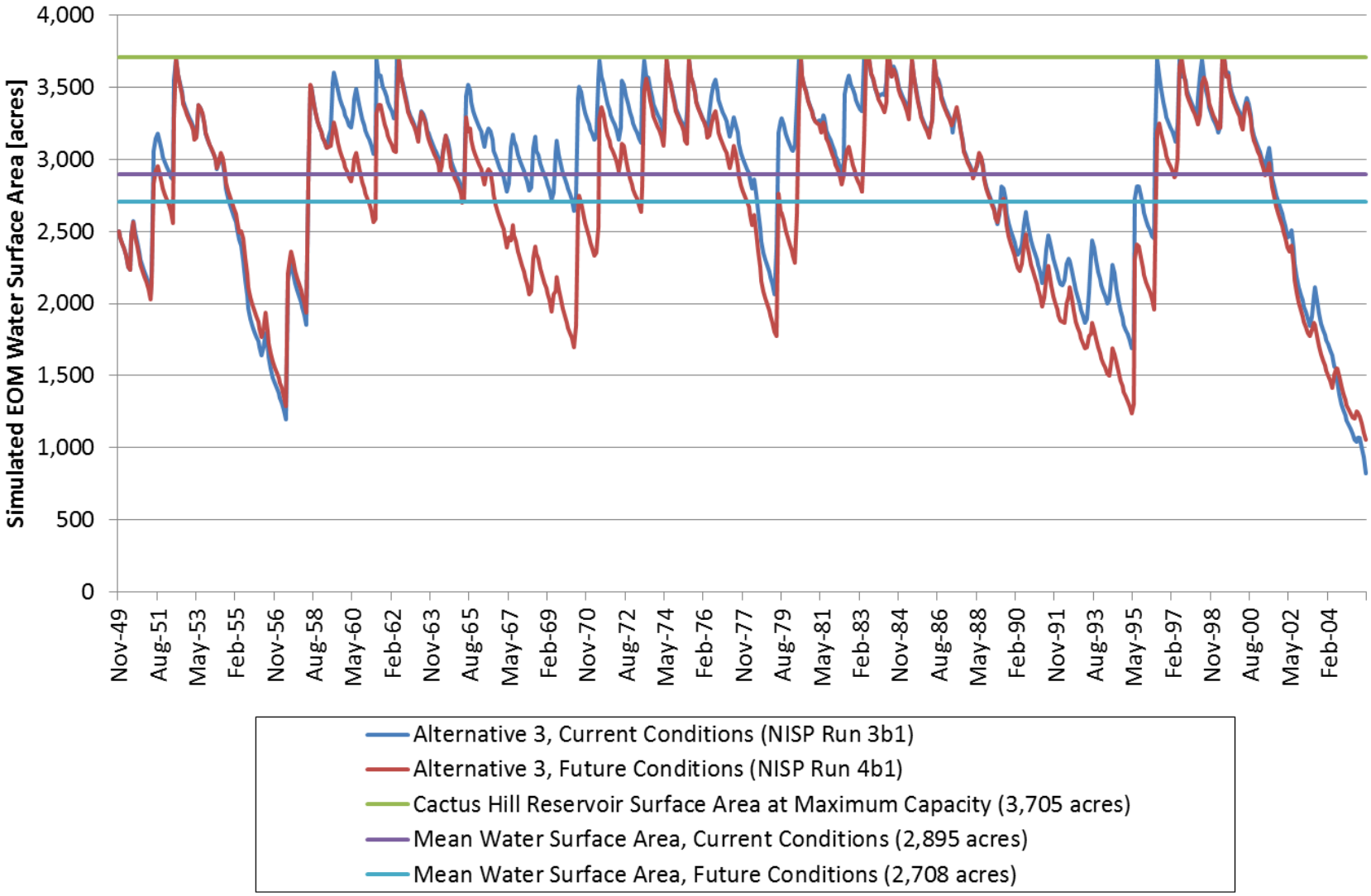


Figure D2. Cactus Hill Reservoir Annual Evaporation, Alternative 3, IY 1950-2005

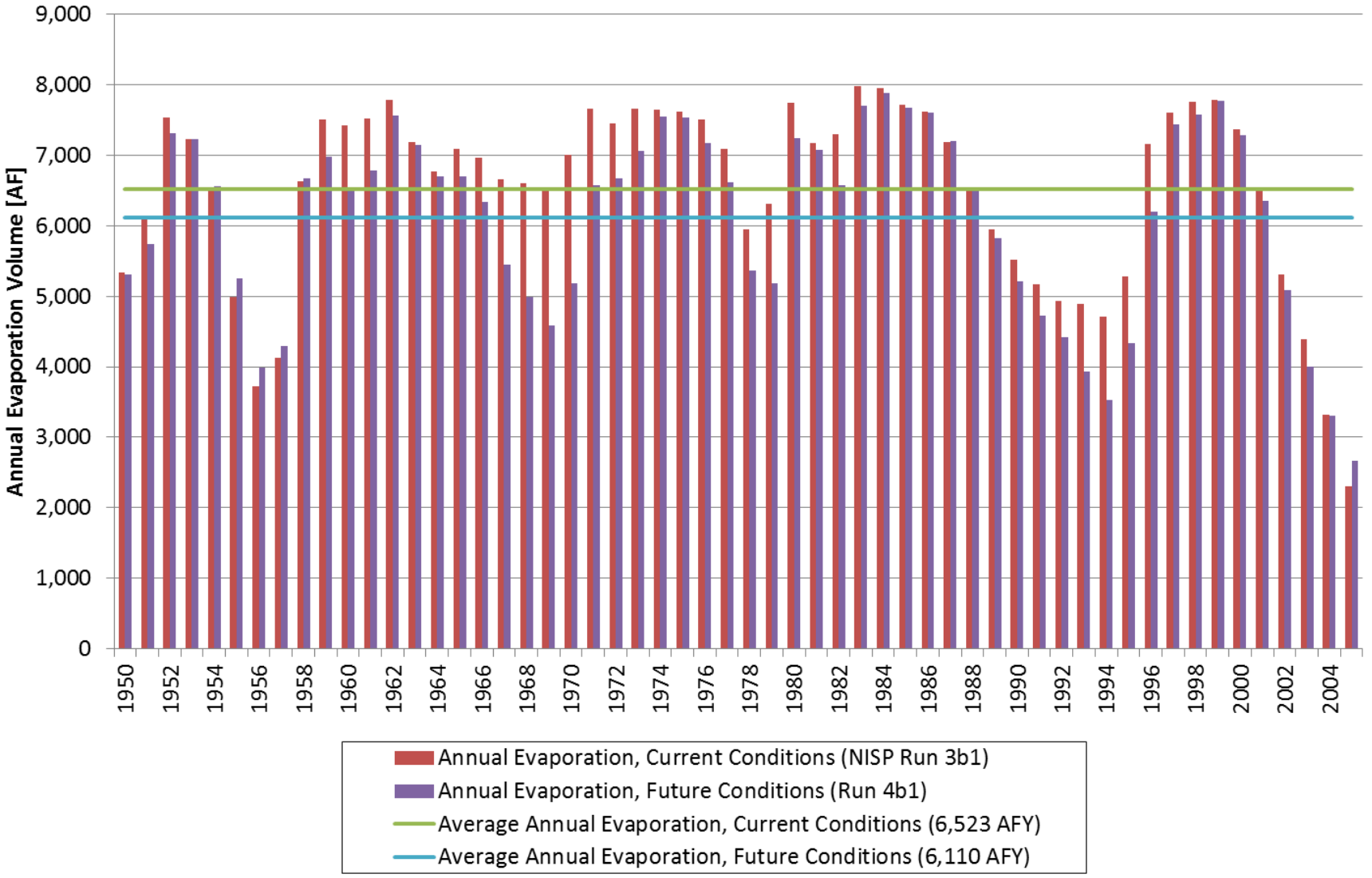
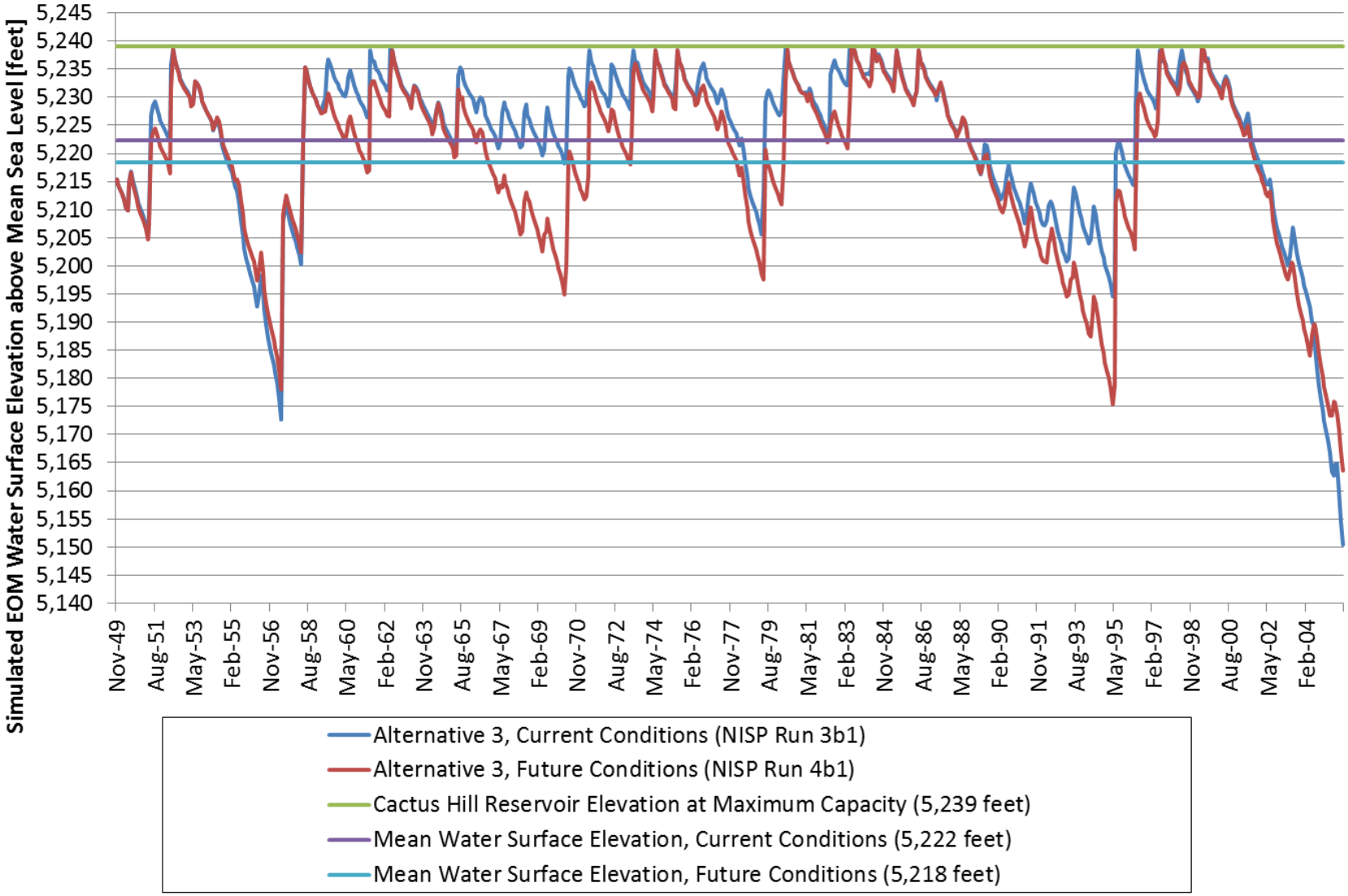


Figure D3. Cactus Hill Reservoir EOM Water Surface Elevation, Alternative 3, IY 1950-2005



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Appendix E

Cactus Hill Reservoir (Alternative 4)

Figure E1. Cactus Hill Reservoir EOM Water Surface Area, Alternative 4, IY 1950-2005

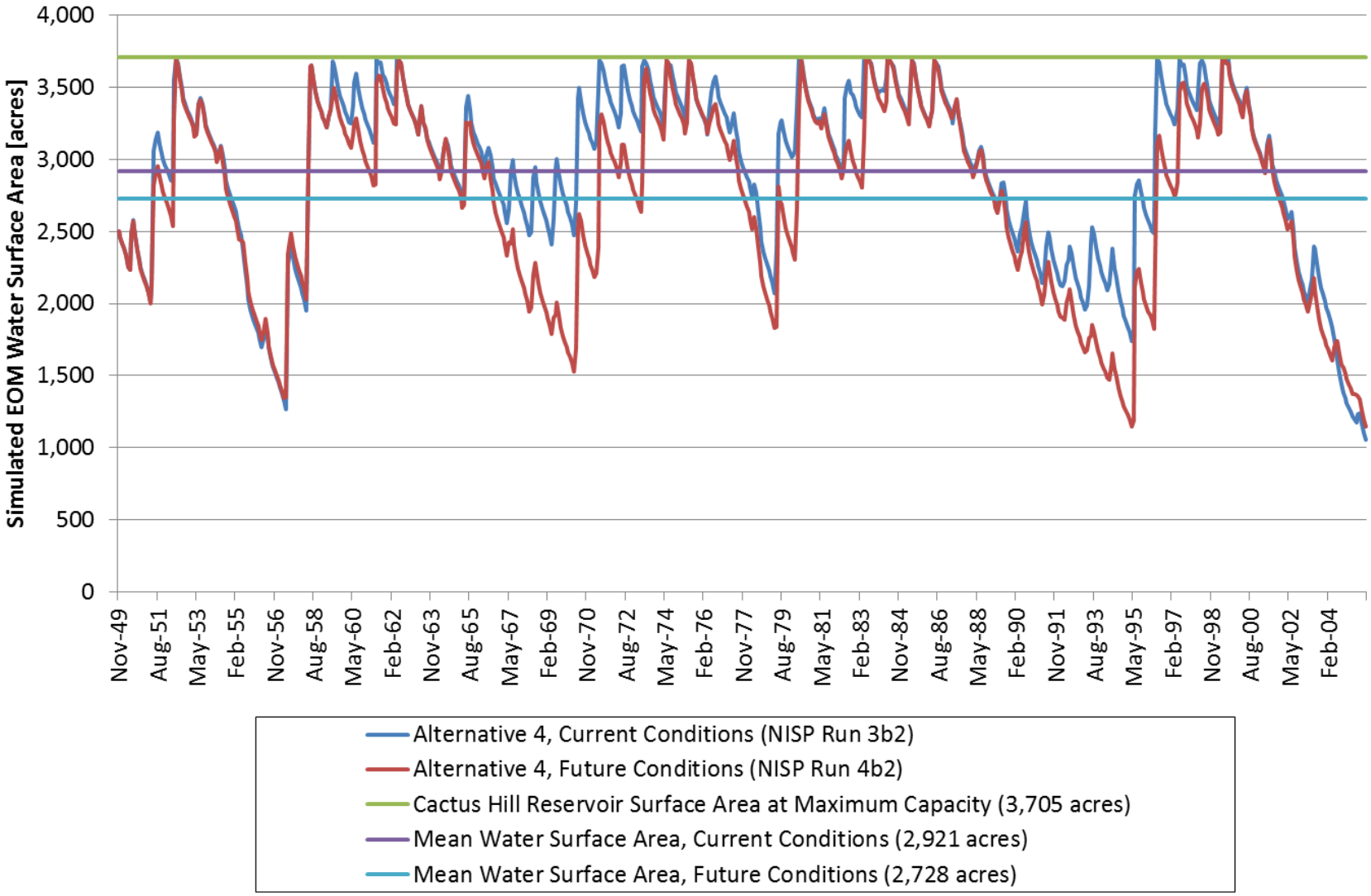


Figure E2. Cactus Hill Reservoir Annual Evaporation, Alternative 4, IY 1950-2005

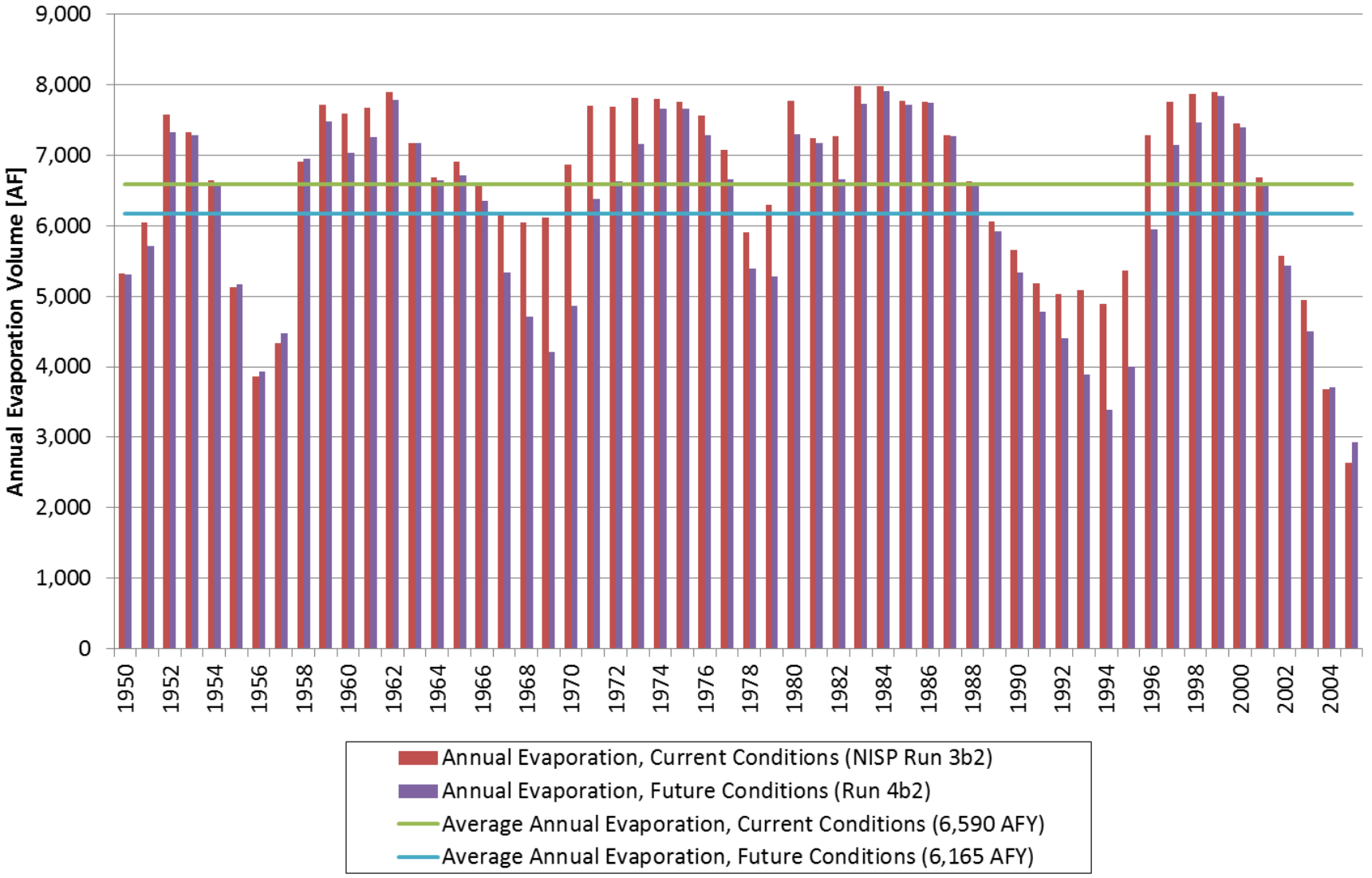
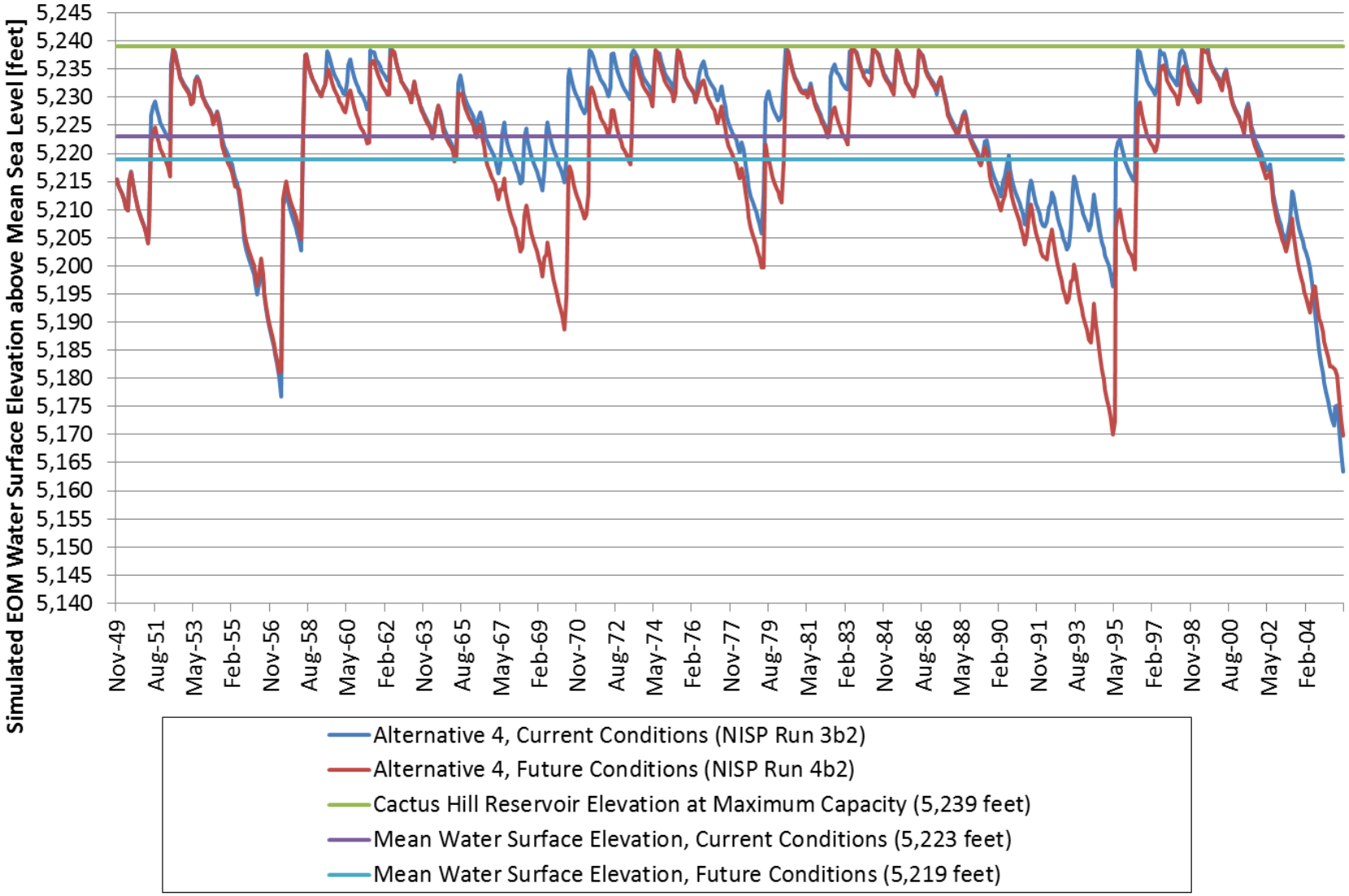


Figure E3. Cactus Hill Reservoir EOM Water Surface Elevation, Alternative 4, IY 1950-2005



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Appendix F

Galeton Reservoir (Alternative 3)

Figure F1. Galeton Reservoir EOM Water Surface Area, Alternative 3, IY 1950-2005

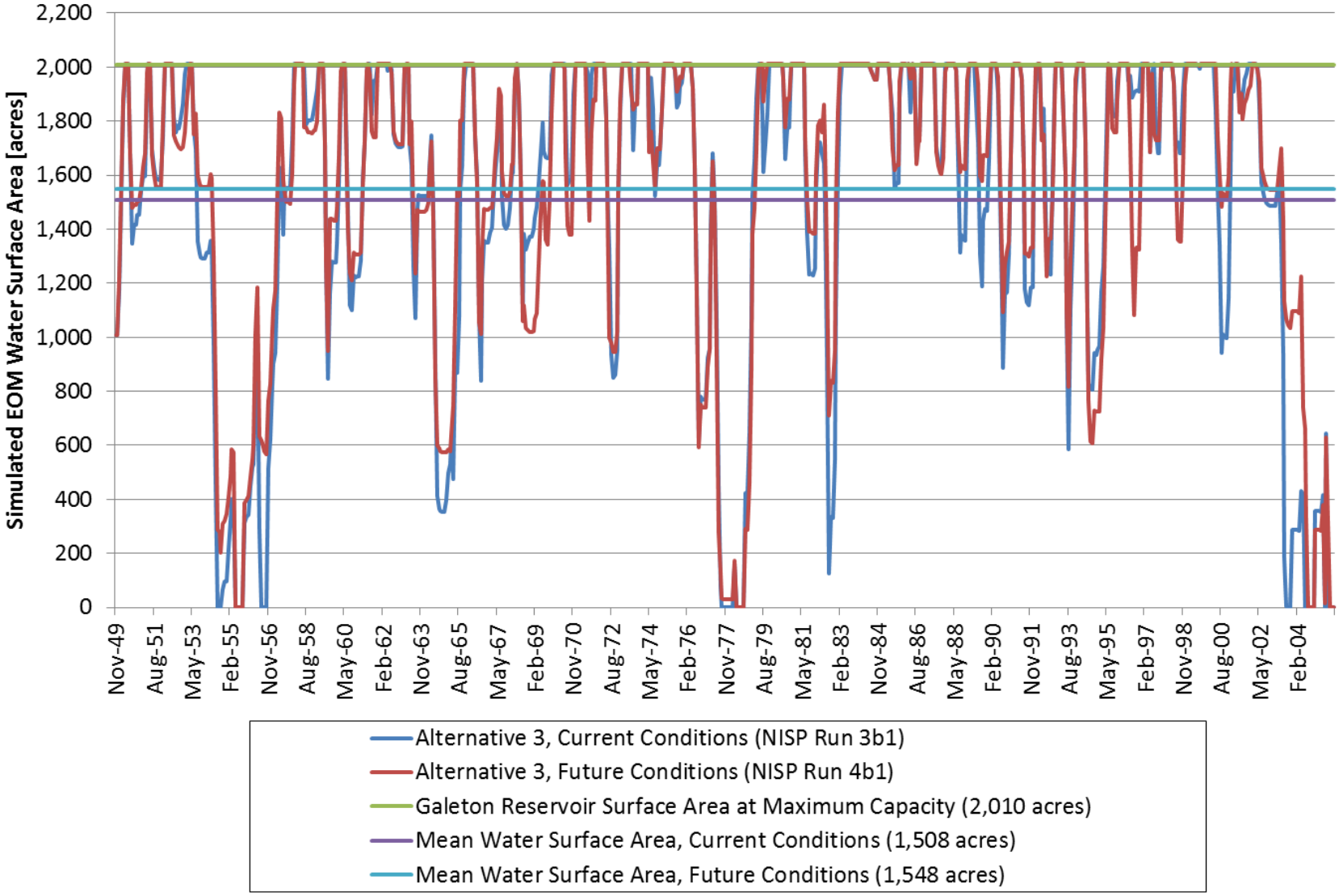


Figure F2. Galeton Reservoir Annual Evaporation, Alternative 3, IY 1950-2005

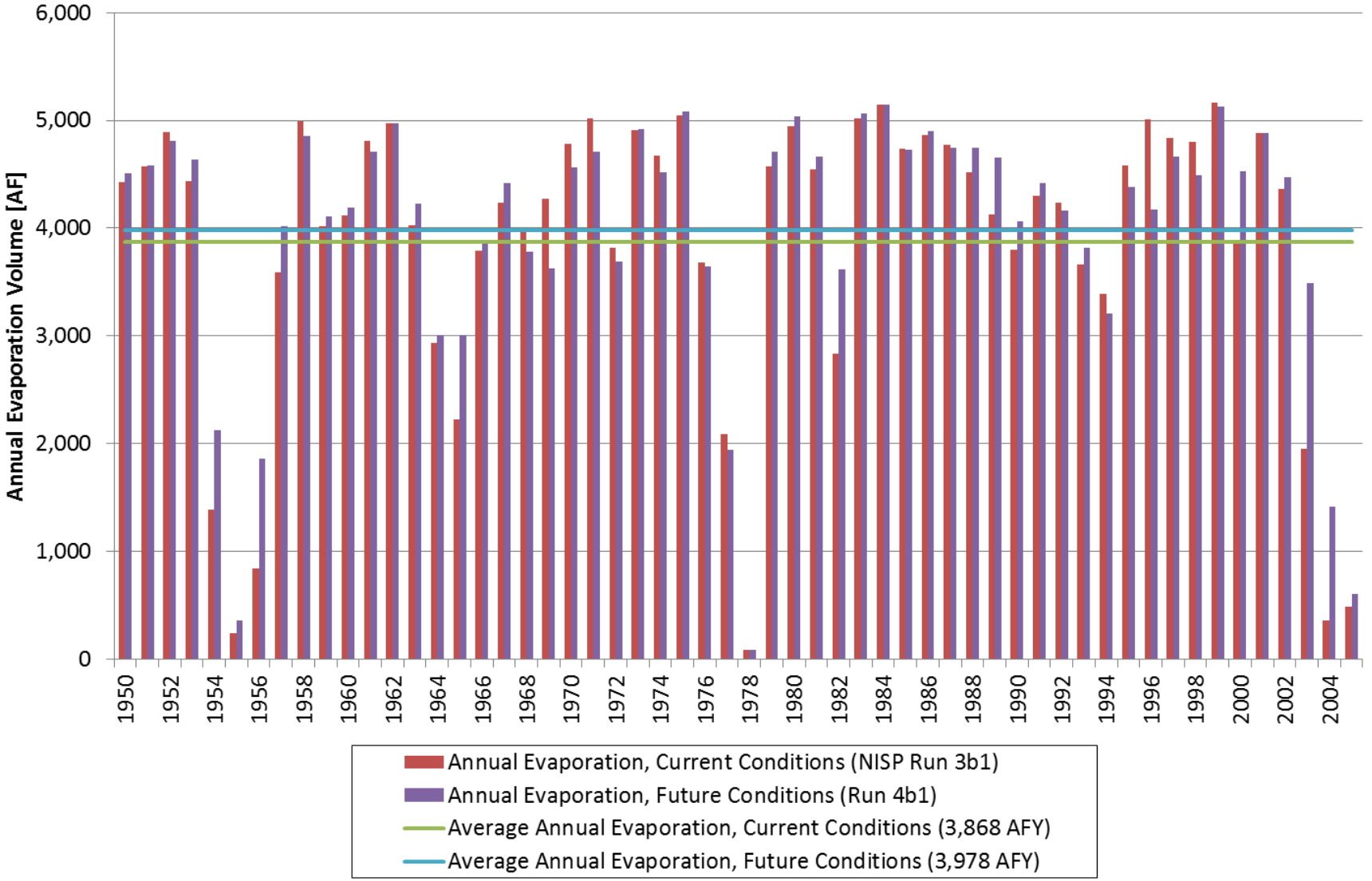
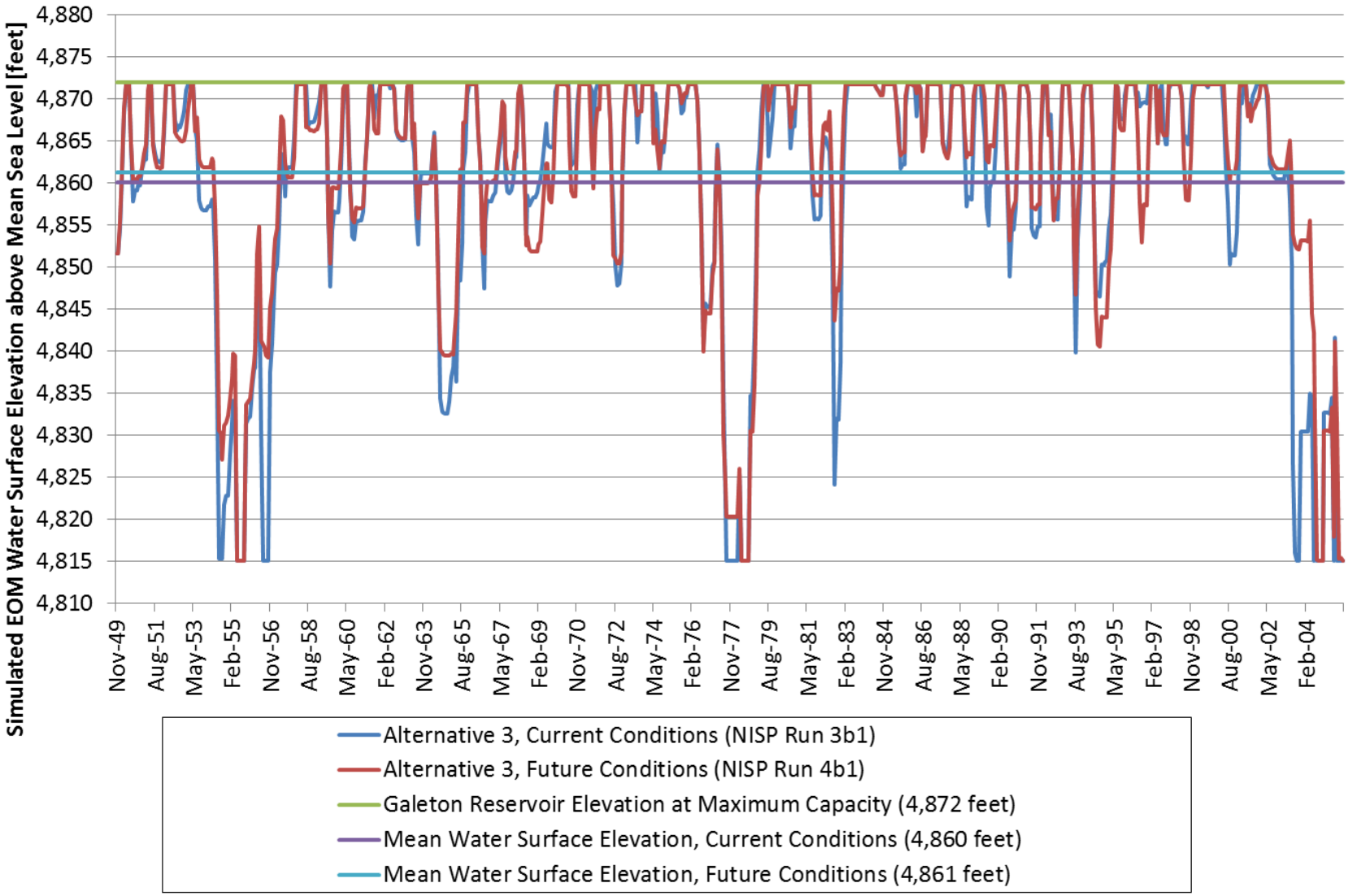


Figure F3. Galeton Reservoir EOM Water Surface Elevation, Alternative 3, IY 1950-2005



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Appendix G

Galeton Reservoir (Alternative 4)

Figure G1. Galeton Reservoir EOM Water Surface Area, Alternative 4, IY 1950-2005

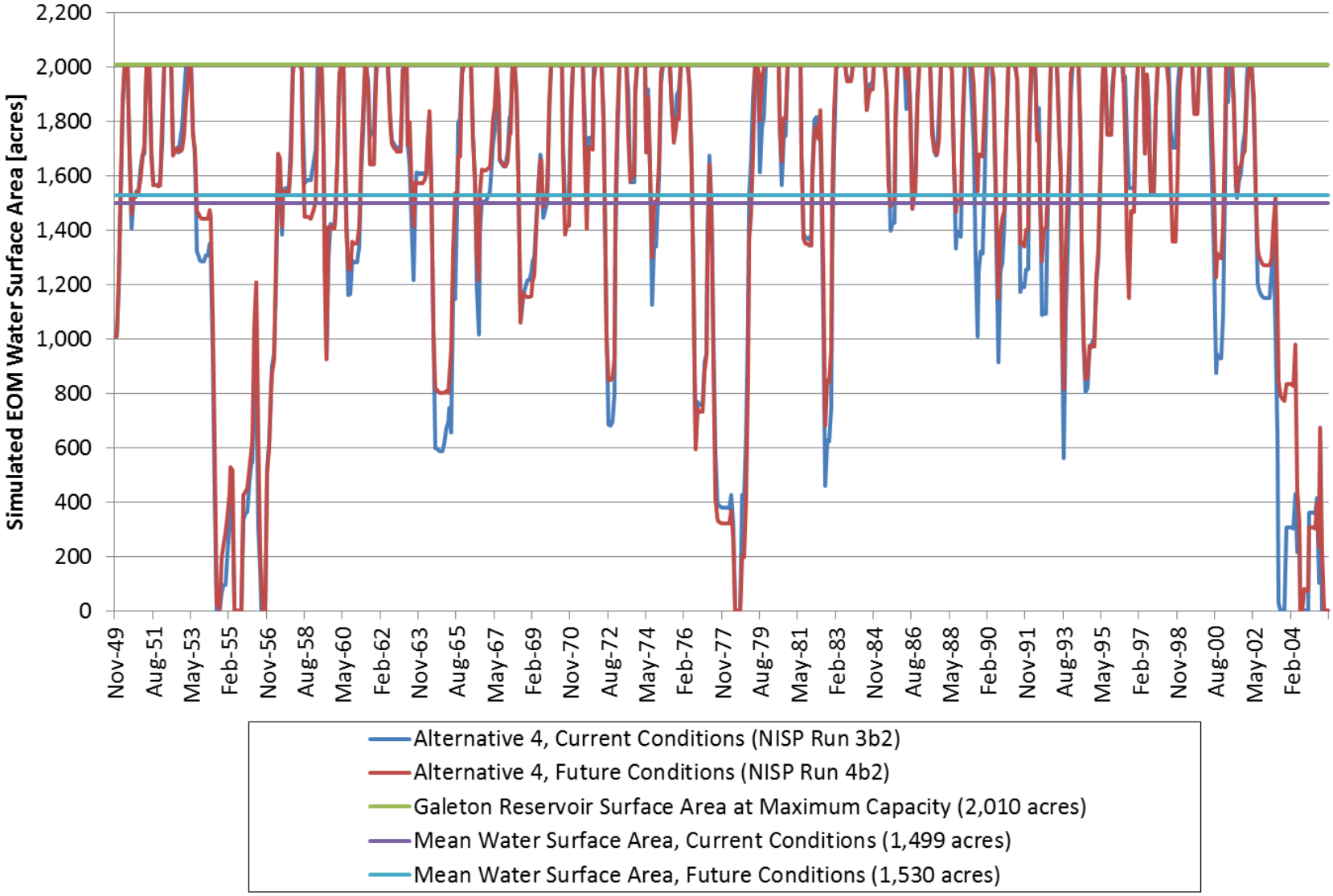


Figure G2. Galeton Reservoir Annual Evaporation, Alternative 4, IY 1950-2005

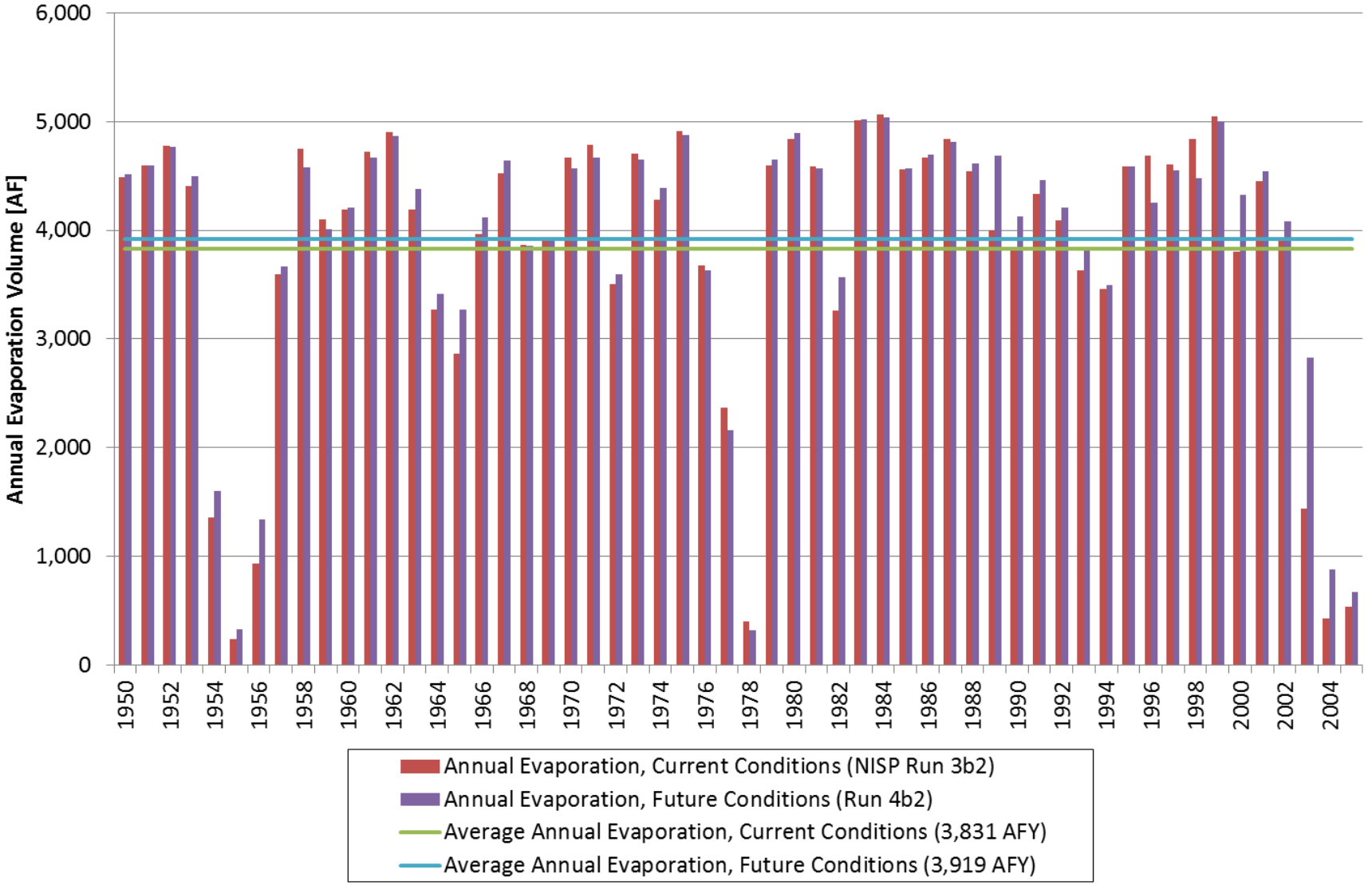
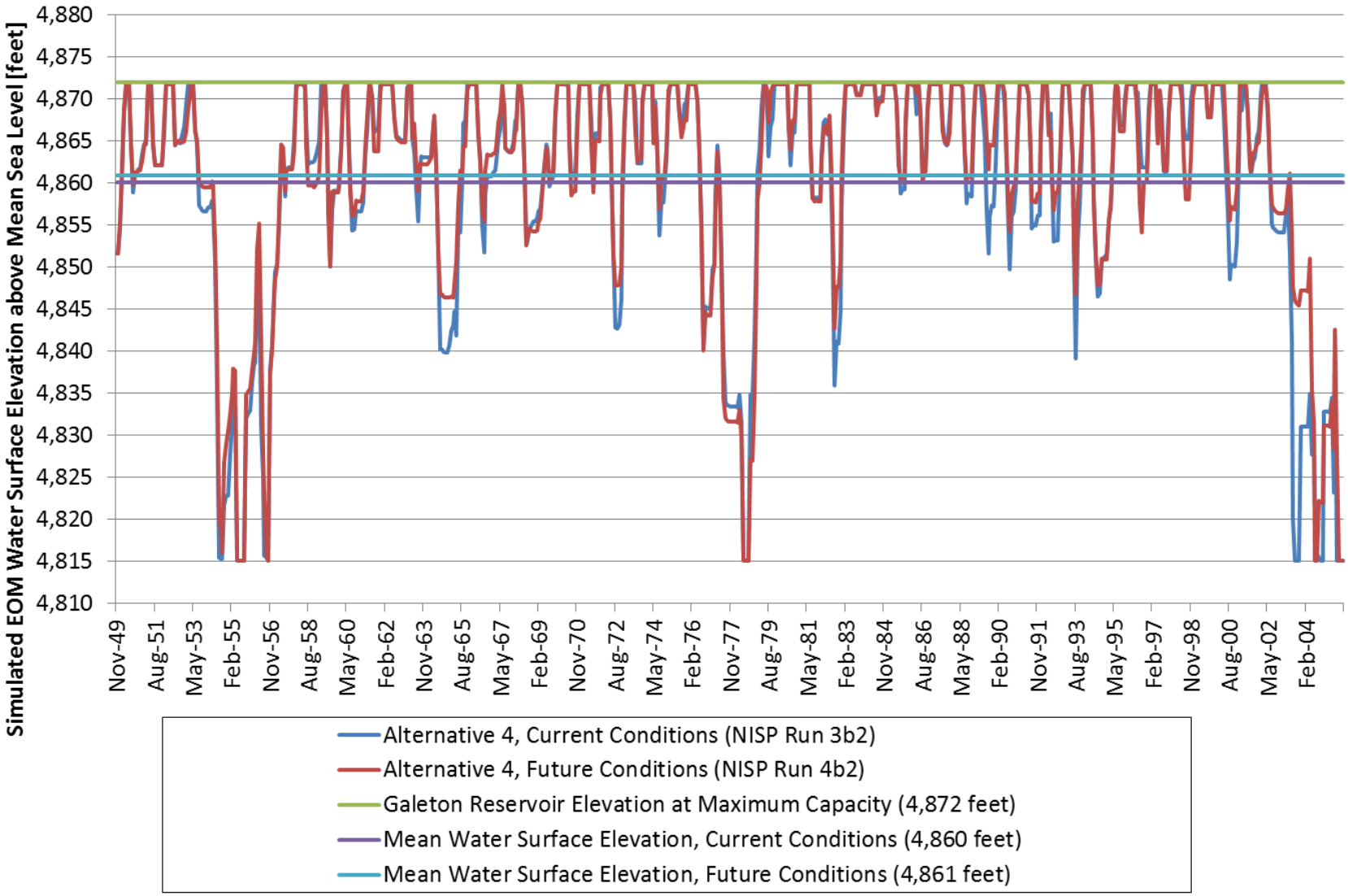


Figure G3. Galeton Reservoir EOM Water Surface Elevation, Alternative 4, IY 1950-2005



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Appendix H
References

Appendix H is available on CD by Request Only