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September 3, 2015

Ref: 8EPR-N

Kiel Downing
Denver Regulatory Office
U.S. Army Corps of Engineers
9307 South Wadsworth Blvd.
Littleton, CO 80128

Re: Northern Integrated Supply Project Supplemental Draft Environmental Impact Statement
CEQ #20150173

Dear Mr. Downing:

The U.S. Environmental Protection Agency Region 8 appreciates the opportunity to review the U.S. Army Corps of Engineers' (Corps) Supplemental Draft Environmental Impact Statement (SDEIS) for the Northern Integrated Supply project (NISP). The Corps has issued this SDEIS and its previous DEIS in response to a Clean Water Act (CWA) Section 404 permit application from the Northern Colorado Water Conservancy District (Northern). Consistent with our authority under Section 102(2)(C) of the National Environmental Policy Act (NEPA), Section 309 of the Clean Air Act, and Section 404 of the CWA, the EPA has reviewed this SDEIS.

The EPA's comments and recommendations on the NISP SDEIS are provided in this cover letter and in the enclosed Detailed Comments. The cover letter provides a brief project background, a summary of the current conditions of affected waters, a summary of the effects of proposed alternatives, and the EPA's primary concerns that should be addressed before the Final EIS. The Detailed Comments outline additional concerns and recommendations that should also be addressed for the Final EIS.

Background

The Corps developed this SDEIS in response to comments received on its 2008 Draft EIS. Overall, the SDEIS reflects a significant amount of work and includes an array of revised resource impact analyses, including many topics raised in EPA's comments. The Corps, Northern and water users along the rivers spent over three years after the Draft EIS to develop a detailed model to better understand the extremely complex system of withdrawals, return flows and discharges that affect hydrology on the Cache la Poudre (Poudre) River. The resulting hydraulic model, known as the Common Technical Platform (CTP), was built to support NISP as well as future water development projects in the Poudre Basin. While the CTP has some significant limitations that are described in the supporting SDEIS technical documents and discussed in this letter, it has substantially improved the ability to understand and predict monthly river hydrology. The CTP model is the foundation for the revised SDEIS analysis of NISP resource effects including surface water quantity, groundwater levels, water quality, geomorphology, aquatic habitat, and riparian habitat. The SDEIS also now includes a Conceptual Mitigation Plan developed by Northern that offers potential opportunities to mitigate or offset some project impacts.

The EPA concluded in our September 22, 2008, letter in response to the Draft EIS and CWA Section 404 Permit Public Notice that the proposed action may result in substantial and potentially unacceptable impacts to the Poudre and South Platte Rivers. The EPA has participated as a Cooperating Agency throughout this NEPA process, and we have remained heavily engaged between the Draft and Supplemental Draft EISs. Most of the points in this letter have previously been shared with the Corps through our Cooperating Agency role. In our DEIS letter, the EPA identified both the Poudre and South Platte Rivers as *Aquatic Resources of National Importance* pursuant to CWA Section 404(q) and Part IV(3)(a) or the 1992 Memorandum of Agreement between EPA and the Corps.

Project Context & Summary of Effects

The ecological functions of the Poudre and South Platte Rivers are stressed by the many existing water uses and withdrawals as illustrated by Chapter 3 of the SDEIS which describes the affected environment and project baseline. As further evidence of the degraded river conditions, the State, through the application of Colorado's Regulation 93 which identifies CWA Section 303(d) water quality impairments, has listed segments of these rivers as impaired; and thirteen dry-up points have been documented on the Poudre and three on the South Platte. Although stressed and, in some instances currently degraded, these river systems are of ecological, agricultural and recreational value to local and regional areas in Colorado and their aquatic and hydrologic functions are extremely difficult to replace.

The SDEIS identifies resource impacts from this project that primarily stem from the effects of withdrawing water and reducing flows in the river segments from the mouth of the Poudre canyon down into the South Platte River. The project would take the largest volumes of water in the runoff months of April through July, but it also proposes flow reduction (as a percentage of monthly river flow) in several non-runoff months. High flows associated with spring runoff are important to sustaining river processes and functions. High flows scour algae, move fine sediments downstream, and shape the channel itself. Conversely, when rivers lose peak flows, they tend to lose channel diversity and accumulate fine sediment and aquatic vegetation. These changes reduce the river's habitat value for fish and aquatic insects and can reduce recreational values. Additionally, flow reductions can adversely affect water quality (through loss of dilution), stream temperatures, riparian vegetation and wetlands.

Alternative 2, is the applicants' preferred alternative and the flow effects of Alternative 2 are fairly representative of the impacts of all three action alternatives in the SDEIS. The analysis in the *2014 Water Resources Technical Report*[1] predicts Alternative 2 would reduce average monthly runoff season (May, June, July) flows in the Poudre River at the Canyon gage by 18 to 48%. At the Lincoln Street gage in the City of Fort Collins, average monthly spring runoff flows would be reduced by 25 to 68%. Effects at some locations would occasionally be greater, with dry-year reductions projected at 78% in June at the Boxelder Creek gage. The South Platte River at the Kersey gage would experience flow reductions of 2 to 11% in runoff months over all modeled years and up to 23% in June during average water years. The SDEIS predicts impacts to recreation and the associated economy will occur due to a 35% reduction from 54 to 35 boatable days under average conditions. The SDEIS also describes reasonably foreseeable future actions that would further reduce river flows beyond those projected for 2050. We note that Northern's Conceptual Mitigation Plan includes some potentially beneficial measures that would curtail NISP diversions at specified low flows, provide for a 10 cubic foot per second flow through Fort Collins during September and through the winter, and includes a possible measure to avoid late summer withdrawals in dry years when low flows are critical. The Plan does not

[1] Water Resources Technical Report, Tables 6.1-6.6 and 6.10

currently include measures that would assure flows are available for maintaining channel functions (*e.g.*, stream morphology, aquatic habitat, sediment transport) or measures to specifically address the anticipated water quality impacts.

Specific Concerns with Project Effects and Analyses

The SDEIS predicts similar effects for all three action alternatives for hydrology, water quality, stream morphology and wetlands. Some alternatives appear to offer certain environmental advantages or disadvantages at various locations or times over the others, though on balance the EPA does not identify a major environmental impact difference among the action alternatives. Alternative 2 has the highest wetland impacts but may also offer more opportunity to mitigate impacts to some resources due to Glade Reservoir's location upstream of the affected segments. Glade would also likely have better water quality compared to the other reservoirs proposed in the alternatives.

Hydrology. The SDEIS includes updated effects analyses based on the CTP hydrologic modeling. The CTP predicts river flow conditions at a monthly time-step, and does not predict flows at the daily or hourly time-steps that are important to understanding many project effects. The CTP monthly output is converted to daily predictions using a statistical tool to "disaggregate" the monthly data. The EPA has expressed concern to the Corps that the disaggregation method does not appear capable of accurately representing high-frequency, low-flow events and we expect that it is likely to over-predict high flow events and under-predicts low flow events. Because the CTP is the foundation for effects analyses in many other resource areas (*e.g.*, water quality, aquatic resources, stream morphology, permitted dischargers, groundwater, riparian habitat and wetlands), its expected limitations at low and high flows likely restrict the ability to reliably predict resource effects at those flows. We recommend developing an improved statistical disaggregation method for the Final EIS and then testing the method through standard model validation procedures to determine the method's capabilities. Improving the predictive ability of the disaggregation method would allow for more accurate resource effects predictions at high and low flows and may improve the understanding of project impacts at river dry-up points. If an improved method is not available, it will be important to conduct a model validation for the existing method to document its specific capabilities. If the method does not predict certain flows well, it will be important to identify additional opportunities to avoid effects. The current uncertainty in the analyses argues for a conservative mitigation plan that includes requirements for a monitoring plan to assure mitigation effectiveness.

Water Quality. As acknowledged in the SDEIS, the Phase I water quality analyses developed for the SDEIS are designed to predict the direction of water quality effects, but are not yet capable of predicting the magnitude of those effects. We understand that the Corps plans to complete a Phase II, quantitative analysis for the Final EIS and for use in State of Colorado's CWA Section 401 Certification review and we strongly support that plan. Without adequate mitigation, the project's flow reductions are likely to cause or contribute to temperature impairments on the Poudre River, and may exacerbate other water quality impairments through loss of dilution flow. Understanding the magnitude of water quality effects is necessary to demonstrate the project can be implemented consistent with Clean Water Act requirements. That analysis is also prerequisite to developing mitigation measures or adaptations that prevent changes in water quality at critical times. At this time, the EPA is not able to determine whether this project can avoid objectionable or unacceptable impacts to water quality.

Given the importance of the planned Phase II analyses and of avoiding impairments, the EPA strongly recommends that the public and resource agencies be afforded a formal comment opportunity on the analysis in advance of the Final EIS. The public review opportunity may identify

mitigation or avoidance measures that could assure the project proceeds and obtains the water quality certification required. We understand the State has a public review and comment period associated with its CWA Section 401 Certification process; however, the State review addresses only the preferred action and, consequently, is not equivalent to the opportunity afforded to the public under NEPA.

Mitigation. The EPA encourages Northern and the Corps to update the Conceptual Mitigation Plan to include measures to address the aquatic resource effects related to reduced volume and frequency of flushing and channel maintenance flows in the Poudre River. We also anticipate that specific mitigation will be needed to demonstrate how the alternatives will avoid causing or contributing to State water quality standards violations including temperature (40 CFR § 230.10(b)) or significant degradation (40 CFR § 230.10(c)). Regulations governing compensatory mitigation for losses of aquatic resources for activities authorized by permits issued by the Corps will apply to this project (40 CFR § 230.91).

The SDEIS does not evaluate the effectiveness of the proposed mitigation measures in preventing or offsetting impacts with the exception of the flow augmentation program that was analyzed as part of Alternative 2. Some proposed mitigation measures would be expected to have both positive and negative environmental effects. For example, the 10 cfs augmentation flow and July/August curtailment measures would use water diverted from peak flows (increasing the loss of ecologically important higher flows) to provide dry season flows (a benefit to aquatic life and water quality). We recommend using the Final EIS to more specifically evaluate each mitigation measure's positive and negative effects and their capability to reduce or offset the project's specific effects.

We note that some of the aquatic resource mitigation measures in the Conceptual Mitigation Plan are only applicable to Alternative 2. Because the Corps will evaluate the least environmentally damaging practicable alternative under 40 CFR Part 230 independent of proposed mitigation, we recommend that analysis be provided on hydrologic and resource effects both with and without applied mitigation measures (*e.g.,* the augmentation flow measure). We also recommend that aquatic impact mitigation measures similar to those provided in Alternative 2 be added in the Final EIS for Alternatives 3 and 4. Additional comments and recommendations regarding the Conceptual Mitigation Plan are located in the enclosed Detailed Comments.

Clean Water Act Section 404. A Clean Water Act (CWA) Section 404 permit will be needed for this project and the Corps intends for the SDEIS to address compliance with the CWA Section 404(b)(1) Guidelines at 40 CFR Part 230 (Guidelines). The EPA believes the SDEIS has not yet provided the information needed to determine compliance with the Guidelines in accordance with 40 CFR 230.12 due to: 1) analysis regarding the availability of potentially less damaging alternatives appears constrained by the narrow project purpose (40 CFR § 230.10(a)); 2) lack of information and quantitative analysis regarding potential violations of state water quality standards (40 CFR § 230.10(b)); 3) lack of information and analysis regarding the potential for the proposed action to cause or contribute to significant degradation to waters of the U.S. including the Poudre and South Platte Rivers (40 CFR § 230.10(c)); and 4) lack of a detailed mitigation plan for some relevant effects (40 CFR § 230.10(d)). This letter identifies additional information that should be included in the Final EIS before the Corps considers the decision regarding the Section 404 permit. Specific comments on this topic are provided in the enclosed Detailed Comments.

Other Substantive Concerns. The Detailed Comments also identify concerns and recommendations related to water quality, permitted dischargers, stream morphology, aquatic biological resources,

wetlands, riparian areas, scope of effects, alternatives, cumulative effects, agricultural impacts, and climate change.

Conclusion and Rating

In accordance with the EPA's policies and procedures for review under NEPA and Section 309 of the Clean Air Act, the EPA is rating all action alternatives "Environmental Objections – Insufficient Information" ("EO-2"). The "EO" rating signifies that the EPA's review identified the potential for the NISP project to cause or contribute to violations of water quality standards or significant degradation that, without sufficient mitigation, could be substantive and would occur on a long-term basis. The "2" rating signifies that the EPA's review identified the need for improved impact analysis and mitigation to adequately assess the potentially significant, long-term environmental impacts of the proposal. Given the importance of documenting the project's consistency with requirements in the Clean Water Act, the planned Phase II water quality effects analysis and the related mitigation for those effects should include a formal and full public review in advance of the Final EIS. A description of the EPA's rating system can be found at: http://www2.epa.gov/nepa/environmental-impact-statement-rating-system-criteria.

Thank you for the opportunity to review this SDEIS. Please feel free to contact me at 303-312-6776 or the NEPA Program Director, Phil Strobel, at 303-312-6704 with any questions. The EPA will be available to coordinate with the Corps as it addresses comments received on this SDEIS.

Sincerely,

Martin Hestmark
Assistant Regional Administrator
Office of Ecosystems Protection and Remediation

Enclosure: Detailed Comments

cc: John Urbanic, U.S. Army Corps of Engineers
Martha Rudolph, Colorado Department of Public Health and Environment
Aimee Konowal, Colorado Department of Public Health and Environment

Northern Integrated Supply Project (NISP)
Supplemental Draft Environmental Impact Statement (SDEIS)
Detailed Comments
U.S. EPA Region 8

I. Water Quality Detailed Comments

A. Water Quality Analysis

The Phase I analysis included in the SDEIS is used to identify parameters of interest, to make relative comparisons among alternatives, and to examine the adequacy of the available data to support more detailed analyses in Phase II. The Phase I approach uses relationships between concentration and flow to identify the potential for the project to effect particular water quality parameters. It does not take into account the sources or loading of those parameters. The EPA was not able to determine, based on Phase I analysis, the extent to which the project alternatives are likely to cause or contribute to water quality standards violations. The detailed water quality conclusions in the SDEIS, which range from "negligible" to "moderate" impacts, presented in Table 4-50 are in some cases not fully supported by the Phase I analyses and may need to be revised following the Phase II analysis. For these reasons, the EPA supports the plan to develop the Phase II analysis which should allow comparison of project impacts against water quality standards and should enable the Corps to determine associated mitigation requirements.

We are concerned that the SDEIS raises questions of data availability and quality to support parts of the Phase II modeling. If it is determined that data issues would preclude the ability to reach detailed individual conclusions for parameters of concern, we recommend considering whether additional data collection is warranted in those cases. Another option for addressing data gaps and the associated uncertainty is a water quality monitoring and adaptive management program. It should be noted that there are complexities in this type of adaptive management. It is difficult to design a monitoring program that can determine the project's specific contribution to the observed condition. We recommend the approach in the Final EIS focus on achieving best effects predictions available, and then providing mitigation that is conservative enough, given the remaining uncertainty, to avoid objectionable effects.

Specific comments:

- Table S-6 is missing the footnote in the Alternatives 3 and 4 columns to denote that the selenium standard in Segment 11 is currently exceeded.
- Section 4.3.4.2.2 (p. 4-106 to 4-107) contains some contradictory information regarding manganese, chloride and sulfate concentrations and lacks the rationale for the parameters of focus (iron).

B. Temperature Analysis

The EPA appreciates the more scientifically robust assessment of the temperature-sensitive stream reaches within the Cache la Poudre and South Platte River systems based on current conditions. The SDEIS highlights the importance of the temperature analysis stating, "[a]ll action alternatives would have the potential to cause further exceedances of the temperature standards in some locations and some years (p. S-41)." Further, the Aquatic Biological Resources section of this SDEIS (Section 4.12) anticipates the need for temperature mitigation stating, "[t]here could be a minor to moderate increase in summer temperatures in Segment A that, if

unmitigated, could have an adverse impact on trout." The SDEIS Phase I temperature assessment used existing data sets and a transparent set of assumptions to identify the temperature sensitive river reaches in the project area. The analysis of temperature effects provides a useful assessment of potential changes in stream temperature focused on the direction (increase or decrease) and timing of projected changes in flow for each of the alternatives at different locations.

We expect the Phase II quantitative analysis will provide necessary information to assist in identifying the expected frequency and magnitude of the alternative's temperature effects as well as the thermal benefits of proposed mitigation. At this time, the EPA is not able to determine whether the project will cause or contribute to exceedances of the State's water quality temperature standards. To enable that assessment, the EPA strongly supports the Phase II assessment. Phase II will also be critical in determining the differences in water temperature impacts across the alternatives and should enable the Corps to identify the mitigation needed to prevent exceedances of the temperature standard.

C. Water Quality Mitigation

The EPA appreciates addition of the Conceptual Mitigation Plan (Appendix A) in the SDEIS. The Plan offers some potentially important commitments to mitigate project impacts. In the Plan, Northern offers to provide $1 million for developing a Stream Channel and Habitat Improvement Plan and $5M plus $50,000/year for 20 years for adaptive management. The Plan offers winter season augmentation flows under Alternative 2, as well as measures that would curtail NISP diversions at specified low flows. Low flows can be important for both temperature and water quality and these measures offer opportunities to reduce project impacts to the Poudre. Alternative 2 also offers the possibility to provide flows to the Poudre from the lower stratum of Glade Reservoir where water temperatures are cooler and may offer a benefit during high temperature periods of the year. The SDEIS does not yet include an assessment of the expected effectiveness of these mitigation measures for achieving environmental benefits, satisfying regulatory requirements and offsetting project impacts. Our wetlands comments below suggest a potential opportunity to reduce some pollutant load through the wetland mitigation that will be needed for the project. The EPA recommends that the Final EIS evaluate the potential effectiveness of the proposed water quality mitigation in light of the complete Phase II water quality effects assessment. The assessment should specifically evaluate the Project's ability to avoid contributing to WQS exceedances.

D. Assessment of Glade Enlargement Option

The Conceptual Mitigation Plan introduces an option of enlarging Glade Reservoir from 170,000 AF to 192,500 AF in order to accommodate curtailment of late summer diversions to protect water quality while maintaining project yield (Appendix F, p. 86). This option would further decrease May through July peak flows by 2.6% while effectively increasing late summer low flows by 16.6%. This measure would therefore have environmental trade-offs involving loss of additional spring flushing flows, and a larger reservoir footprint in order to avoid July and August temperature impacts from the project. There is another proposed mitigation measure (FW-02) that would curtail NISP diversions when the Poudre reaches specific low flows at specific locations that may overlap with the Glade enlargement measure. We support the plan to do a more detailed assessment of the Glade enlargement option. We recommend three model runs be added to enable a better assessment of how these measures would work together: 1) Glade enlargement with FW-02 curtailment; 2) Glade enlargement without FW-02; and, 3) FW-02 without Glade Enlargement. In addition to the water quality evaluations identified on p. 88 of

the conceptual mitigation plan, the EPA recommends the Final EIS evaluate the Glade Enlargement option's impacts to stream morphology, and aquatic resources during runoff and low flow, comparing the relative costs and benefits. The EPA also recommends the Final EIS describe how often and when these mitigation flows would (and would not) be available. Finally, we recommend identifying whether the additional 22,500 acre feet in the enlarged pool could ever be used in the adaptive management program for other environmental purposes such as providing flushing flows or to curtail diversions at specific temperature thresholds at periods outside the July and August timeframe.

E. Assessment of Reclamation Option

The EPA recommends that the Final EIS include a comparison of effects between the Reclamation Action Option and No Reclamation Action Option because of the hydrologic differences characterized in the SDEIS. The Reclamation Action Option entails an exchange between NISP (Glade Reservoir) and the Colorado-Big Thompson (C-BT) Project (Horsetooth Reservoir or Carter Lake) through an excess capacity storage of NISP water in C-BT facilities. It also involves a new pipeline between Glade and Horsetooth Reservoirs. Because deficits and paybacks between the systems would be on a multi-year rolling average basis, the Reclamation Action Option may have greater short-term impacts than the No Reclamation Action option. Under the Reclamation Action Option, Glade's water surface fluctuations appear most pronounced with an average of 15-30 feet monthly drawdown and maximum drawdown as much as 35 feet (pp. 4-39, 4-42). The SDEIS also suggests that releases to the Poudre River may be lower under the Reclamation Action Option and much more regular under the No Reclamation Action Option (pp. 4-41, 4-42).

F. Reservoir Water Quality

The SDEIS indicates that Galeton Reservoir may not meet water quality standards for parameters including nutrients, chlorophyll *a*, and pH.[1] The EPA recommends considering whether measures are available to reduce water quality impacts in Galeton Reservoir.

The Conceptual Mitigation Plan includes measure AG-08 to make Galeton Reservoir available to Colorado Parks and Wildlife for raising native warmwater fish for reintroduction. We recommend considering whether Galeton's water quality and fluctuating water levels are likely to support that proposed mitigation measure.

G. Effects to Permitted Dischargers

The SDEIS includes an improved analysis of impacts to permitted dischargers. The SDEIS does not yet consider changes to actual permit limits and we recommend the Final EIS include this analysis. Notably, the Conceptual Mitigation Plan includes a provision (FW-02) that may protect regulatory low flows by diverting water only when the minimum flow criteria are met at three defined locations on the Poudre. Nothern's Mitigation Plan indicates that the NISP action

[1] EPA notes that Colorado has adopted a long term state-wide approach to application of numeric standards for nutrients, including phased application of numeric standards for total phosphorus, total nitrogen, and chlorophyll-a (a surrogate measure of algal biomass). Efforts to address nutrient pollution in the South Platte Basin, such as the total maximum daily load developed for Barr Lake and Milton Reservoir, are expected to improve water quality in the Basin with respect to nutrients.

alternatives should not impact waste water treatment plant regulatory low flows in river Segments 10 and 11, and segments downstream could experience negligible impacts to regulatory low flows due to NISP. A second mitigation measure (FW-04), the proposed Augmentation Flow Program is the available through Alternative 2 and would assure a 10 cfs flow from the canyon mouth through Fort Collins to the Timnath diversion during low-flow months of September and November through March. This measure should protect most regulatory low flows in segments 10 and 11 and therefore prevent the project from contributing to regulatory low flow problems downstream in those months. Measure FW-04 appears to provide a benefit to regulatory low flows compared to current conditions in Segments 10 and 11. We recommend the benefits of these mitigation measures be independently assessed in the Final EIS.

Impacts to permit limits are not driven by changes in flow alone, but are also driven by changes in assimilative capacity. We recommend the Phase II water quality analyses be used to more completely inform potential impacts to the dischargers through impacts to assimilative capacity.

II. Stream Morphology and Sediment Transport

The EPA appreciates the additional work that went into the revisions of the stream morphology section in response to the EPA's cooperating agency input. This section of the document is clearly written, and does convey the possible implications of the project alternatives for channel morphology and complexity. There are, as the SDEIS notes, limitations on the analysis, particularly with the use of a 26-year dataset in predicting potential changes to the frequency and duration of large flood events (i.e., greater than the 25-year flood), and predicting threshold responses that would alter the river's morphological trajectory.

The stream morphology section indicates that project alternatives would amplify the existing trajectory of the river condition, including continuing channel contraction, fining of surficial material, and loss of channel complexity. The Project's contribution to these effects was determined to be minor in the reaches upstream of I-25 and moderate downstream of I-25. The SDEIS cites potential consequences of these effects including increased risk of overbank flooding, reduced habitat complexity and quality, and in the reaches upstream of I-25, a greater likelihood for crossing a bio-geomorphic threshold. Because of the effects identified above, as well as the uncertainty within the base CTP hydrologic model, the EPA has the following recommendations for monitoring and mitigation measures:

While the Conceptual Mitigation Plan in Appendix F identifies many opportunities to minimize and mitigate for the project effects to stream morphology, there is no mitigation proposed to offset the most significant and likely driver for future morphological changes associated with this project – the reduced frequency, magnitude and duration of high flows. To sustain the benefits that may be provided by mitigation proposed in Appendix F, those measures should be pursued in combination with minimum flushing flow requirements that are sufficient to mobilize multiple size fractions (a flow for mobilizing fines, scouring algae and vegetation, maintaining channel complexity). The stream morphology section acknowledges a project-related reduction in frequency and duration of smaller flood events. Ongoing changes to the Poudre River are further exacerbated by the loss of these events and any mitigation that may be proposed to offset the project-related changes may not be successful without the regular occurrence of smaller flood events (e.g., bankfull or overbank events). As such, we recommend a minimum flushing flow be established (of sufficient frequency, duration and magnitude) to offset the project's contribution to:

1) vegetation encroachment,
2) loss of connection to overbank floodplain areas, and
3) negative trends in channel condition.

Recent work in the Poudre River system has indicated that carefully designed environmental flows could improve the state of the Poudre River ecosystem and avoid the current trajectory. The City of Fort Collins' Ecosystem Response Model provides test scenarios outlining flow management strategies, and this document could be used as a starting reference to develop such managed flows.

We appreciate some of the concepts presented in the Conceptual Mitigation Plan where collaborative and innovative approaches are identified to achieve multiple objectives or provide benefits for more than one environmental resource. In particular, because continued channel contraction could lead to an increased risk of overbank flooding, during large flood events, the EPA recommends Northern further develop mitigation approaches that reduce the downstream flood risk while improving aquatic habitat availability. As noted in Appendix F, these approaches could include restoring connections with undeveloped floodplain areas (including wetlands), primarily upstream of the I-25 reaches to reduce flood effects downstream. Restoring and reconnecting floodplain wetlands could improve aquatic habitat availability and complexity during overbank periods, and would also provide additional flood storage during peak flow periods. Also, while the SDEIS acknowledges that the flood risk is balanced to some extent by a decreased frequency of flooding at each recurrence interval, this is not the case for large floods, which are less affected by this decrease in flood frequency and not well predicted by the methods used in the SDEIS.

Downstream of I-25, the SDEIS anticipates continued channel contraction, exacerbated by the project alternatives. This channel contraction could lead to the development of a smaller benched channel within the larger cross section, as well as reduced complexity of in-channel morphologic features. These morphological changes reflect a reduction in both aquatic habitat area and quality, and mitigation should be specifically required to offset the project's contribution to these impacts. Mitigation could include aquatic habitat improvements, such as reestablishment of riffle-pool sequences (where sustainable), establishment of important channel features or habitat improvements in the low-flow channel, and reconnection with floodplain areas in combination with flushing flows that ensure engagement of floodplain at annual or semi-annual intervals.

While effects upstream of I-25 are currently anticipated to be minor, the potential exists to cross a bio-geomorphic threshold where channel contraction becomes a permanent characteristic. With vegetation encroachment, there will be less channel capacity to convey the higher flow events, and thus a greater risk of flooding downstream. A narrower active low-flow channel may benefit habitat when the flow regime is permanently reduced; however, when combined with a narrower channel and vegetation encroachment, a narrower active low-flow channel may reduce the potential for the channel to convey (and dissipate) higher flood events. Ideally, the following channel components would each be sized appropriately: 1) the active low-flow channel, 2) the bankfull channel and 3) the floodplain/flood-prone width. Sizing each of these appropriately would create a smaller low-flow channel to maintain appropriate habitat conditions, while ensuring that that the channel still has the capacity to carry bankfull flows and connect to the floodplain during high flood flows. We recommend that mitigation be provided that ensures that the channel is appropriately sized for the three channel components listed above.

The SDEIS states that the predicted reduction in sediment transport potential upstream of I-25 would not cause a substantial change in the channel unless a threshold is reached whereby upstream (or in-channel)

sediment supply exceeds sediment transport potential, or vegetation effects start to dominate. Further, the SDEIS acknowledges that the projected reduced frequency of flows at the current 1-2 year flood levels could increase the potential for colonizing vegetation to establish before it is scoured out by subsequent flow events. The EPA recommends sufficient mitigation be required to offset the incremental effects of the project and to reduce the risk of these effects occurring. Additionally, monitoring and adaptive management should be included in the Mitigation Plan to evaluate the potential for such bio-geomorphic threshold, and to address project-related changes, should they occur. Mitigation to offset the incremental effects of the project could include:

1) Provision of minimum flushing flows (as described above);
2) Active restoration of a narrower active low-flow channel in combination with reconnecting or re-sizing the floodplain in undeveloped areas to carry high over-bank flow events;
3) Evaluating the potential for crossing the bio-geomorphic threshold would include monitoring specific cross-sections susceptible to vegetation encroachment for channel capacity, vegetation changes, sediment deposition, channel complexity; and
4) Adaptive management to modify #1 or trigger additional active restoration under #2.

III. Wetlands and Riparian Habitat

The Conceptual Mitigation Plan outlines the proposed location and amount of mitigation that would be provided for any unavoidable wetland impacts. The biggest impacts from the proposed projects are the 43-44 acres of high and medium quality wetland resulting from the construction and inundation of Glade Reservoir. The Plan states that wetlands will be replaced on an acre-for-acre basis. Constructed wetlands do not always replace the functions of natural wetlands, and constructed wetlands take a number of growing seasons to reach their maximum function meaning there is a lag time for replacing some wetland functions. The EPA therefore recommends that replacement ratios should be greater than 1 to 1. The proposed mitigation sites for Galeton reservoir are in Eaton draw, a tributary that appears to have lower water quality than the Poudre mainstem. We recommend investigating whether it may be possible to design wetlands along Eaton Draw that could have a water quality benefit as well as a compensatory benefit. The EPA will provide additional recommendations or concerns to the Corps regarding compliance with the Section 404(b)(1) Guidelines wetland mitigation requirements as the details of the plan are finalized. We recommend these details be included in the Final EIS.

IV. Aquatic Biological Resources

A. Project Effects

Aquatic biological resources are sustained by both water quality and hydrology. Under current conditions, the SDEIS documents that aquatic life in the Poudre and South Platte Rivers is adversely affected by the current flow regime, temperatures that exceed WQS, water quality impairments, dry-up points, and declining channel morphology conditions. The NISP project reduces flows in the Poudre and South Platte Rivers and has the potential to exacerbate each of these existing impairments. The SDEIS aquatic biological effects analysis is based on the other resource analyses in the SDEIS, and on water quality (including temperature) and hydrology in particular. The EPA's comments above raise two concerns that are relevant to the aquatic biological resource assessment: 1) the lack of quantitative water quality analysis to understand the magnitude of potential effects; and, 2) the likelihood that the CTP has limitations in predicting short term changes in hydrology as well as low and high flow events.

It will be important for the biological resources analysis in the Final EIS to be revised with benefit of the Phase II water quality assessment, and an improved method of converting CTP monthly output to daily flow estimates. In the SDEIS, the biological resource impact analysis may adequately predict the direction of project effects, but is limited by the above factors in its ability to reliably determine the magnitude of those effects. The EPA recommends this effects assessment be updated and enhanced in the Final EIS based on the updated water quality and hydrology analyses to determine more specifically the magnitude of the expected effects and the sufficiency of proposed mitigation.

B. Aquatic Biological Resources Mitigation

The Conceptual Mitigation Plan includes measures that would benefit two low-flow related issues that limit the current habitat capacity for aquatic life: annual low flows and dry-up points. In the mainstem Poudre, the SDEIS identifies up to 13 dry-up points where diversion structures take the full flow of the river for a period of time and the river bed is left dry for some distance downstream. These dry-up points are an existing, significant detriment to the biological resources of these rivers. By withdrawing water at the canyon mouth, the NISP alternatives have the potential to increase the frequency and duration of certain dry-up points. Another habitat limiting factors for a river's aquatic life is the annual low flow. Low flows play a major role in defining a river's overall aquatic habitat capacity and low flows can reduce overwintering habitat for fish. We note two proposals in the Conceptual Mitigation Plan that in combination, could improve low-flow and winter dry-up conditions compared to current conditions. First, the plan includes a 10 cfs augmentation flow measure available within Alternative 2 for the months of September and November through March that would benefit a recreationally valuable section of the Poudre River from the canyon mouth to the Timnath Diversion west of I-25. It appears that this 10 cfs would provide an important improvement over the low flows currently experienced in this reach under wet, dry and average water years. Second, the plan includes a proposal to replace four diversion structures on the Poudre River with multi-function diversion structures in the same reach. The new structures would include a permanent bypass channel that appears to have the potential to assure those structures will bypass the augmentation flow and will no longer produce dry-up points at those sites. The four diversion bypass channels will also be designed to provide fish passage and would be expected to increase the biological capacity of the River in those specific locations compared to current conditions. We recommend the Final EIS provide additional detail on the potential benefits as well as any adverse effects of these mitigation measures to the Poudre.

The Conceptual Mitigation Plan also proposes measures with the potential to at least partially mitigate the project's temperature effects. The proposed stream channel modifications would be expected to offer some benefits to temperature if they result in a deeper low-flow channel and include increased shading. It will be difficult to quantitatively predict the expected temperature benefits of these physical channel enhancements and it can be expensive to sustain the benefits of physical modifications to the stream channel. The plan also proposes a multi-level outlet structure that could allow release of colder water from the bottom of Glade reservoir to reduce river temperatures in the cold water reach. We recommend more detail be included in the Final EIS regarding how releases from multi-level outlet would be used, under what conditions they would be available, and the expected effects to the river. The analysis should evaluate the possibility that water from the bottom stratum of Glade may at key times be high in nutrient and metal concentrations and low in dissolved oxygen. Until there is additional information developed regarding these temperature moderating measures and the Phase II temperature analysis is completed, it is not clear that those measures will be sufficient to avoid contribution to WQS

violations. We recommend that additional consideration be given to a diversion curtailment measure that would kick in to avoid the project contributing to temperature standard violations. A temperature related curtailment measure is mentioned in the Conceptual Mitigation Plan, but it is not specifically defined or committed to.

The Conceptual Mitigation Plan also proposes measures with the potential to at least partially mitigate the project's channel morphology effects. Physical channel enhancements, such as creating a low flow channel where the river is currently broad and shallow, reestablishing connections to the flood plain, and improving shading all can provide benefits to aquatic life. Those benefits can be difficult to sustain over time due to the combination large flood events, reduced frequency of flushing flows and the related potential to accumulate fine sediments. A flushing flow program, as recommended in our channel morphology comments above, would help to sustain these habitat improvement projects and provide aquatic life benefits by mobilizing sediment and maintaining channel diversity.

The Conceptual Mitigation Plan identifies the recreational fishery at Glade Reservoir as mitigation for the aquatic life impacts that will occur on the Poudre and South Platte Rivers, characterizing a fishery at Glade as a major beneficial impact for aquatic life. While a fishery at Glade could potentially be a recreational benefit, it does not mitigate aquatic life impacts and stream morphology impacts to the Poudre and South Platte Rivers. We recommend this measure be moved to the recreation mitigation section.

V. Scope of the Effects Analysis

The EPA remains concerned that the SDEIS's temporal and spatial scope of analysis may miss effects with potential CWA significance. Temporally, all action alternatives include the South Platte Water Conservation Project (SPWCP), which withdraws water from the South Platte just downstream of the confluence with the Poudre in the fall, winter and spring to fill Galeton Reservoir. However, the water quality effects analysis does not extend into the South Platte or the winter period. Spatially, the SDEIS limits its analysis to either the confluence of the Poudre and South Platte Rivers or the Kersey Gage on the South Platte River (depending on resource type). The SDEIS bases these decisions on a threshold flow change of 10% or greater (Section 3.1.3). Additionally, there is concern that the SDEIS applies the 10% change threshold across average monthly flow changes across all years (1980-2005) instead of utilizing the Water Resources Report information that examines this change across varying annual conditions (wet, dry, average). The Water Resources Report identifies monthly average changes of up to 23% and 20% at the Kersey gage (Tables 6.10, 7.10, 8.10). The Water Quality Technical Report observes that Alternative 2 daily streamflows at the South Platte near Kersey[2] will "decrease during 70% of the year, ranging from almost no change to a 96% decrease, with an average 7% decrease." The EPA has expressed concern that small changes in flow (reduction in dilution) have the potential to cause or contribute to water quality standards (WQS) violations where water quality impairments already occur or could occur. Therefore, even in instances where the SDEIS methodology yields negligible or minor effects, there could be objectionable effects from a Clean Water Act standpoint. The South Platte is currently impaired for selenium and manganese from the Weld/Morgan county line to the Colorado/Nebraska border[3] and the Report does not specifically analyze whether project-related flow reductions could exacerbate these impairments. We recommend the Corps re-evaluate the spatial and

[2]Located 2.3 miles downstream of the withdrawal point for SPWCP

[3]Colorado Code of Regulations, Regulation No. 93: *Colorado's Section 303(d) List of Impaired Waters and Monitoring and Evaluation List* (5 CCR 1002-93)

temporal scope of analysis to assure the project will not exacerbate water quality impairments, even if the flow change is less than 10%. This might be accomplished by comparing monthly selenium and manganese concentrations in the lower Poudre and in the South Platte below the confluence, and then determining whether the project's flow changes in average, dry and wet years has the potential to contribute to WQS violations by removing dilution flow.

The EPA understands from the *CTP Hydrologic Modeling Report*, the 2008 Draft EIS and an October 16, 2007 memo prepared by ERO that NISP could utilize water from the Colorado-Big Thompson Project, Windy Gap, the Grand River diversion and the Laramie-Poudre Tunnel both for the initial fill of Glade and periodically in the future. Chapters 3 and 4 include the Grey Mountain Storage Right and the SPWCP exchanges, but do not include these alternative sources. If it is likely that water beyond the Grey Mountain Water Right will be used for the initial fill or ongoing operations, we recommend these additional water sources be evaluated as a component of the project's action alternatives in the Final EIS. If this project will enable the diversion and storage of additional water (beyond current conditions) not already evaluated, will alter the timing or location of such diversion, or will result in a change in the return flow of that water, we recommend those effects also be presented in the Final EIS. If any of these effects will occur, assessing the impacts associated with alternative water sources to fill or operate Glade Reservoir should be considered in determining compliance with Clean Water Act Section 404 (40 CFR 230.10).

VI. Alternatives and Options for Meeting Demand

The NISP project is designed to meet a portion of the future water demands for the communities served. The SDEIS discusses opportunities for meeting demand that were not brought forward into the alternatives based on the Corps' screening process. In our 2008 Draft EIS comments, the EPA raised concerns with the screening criteria. We also suggested water supply options, and we believe these options could assist in meeting a greater portion of the future demand, or might enable a smaller NISP project with fewer impacts. We remain concerned that the selected screening criteria and a narrow purpose and need statement in the SDEIS appear to constrain the alternatives available to meet demand. These constraints may result in exclusion of potentially less damaging practicable alternatives, which would need to be considered under the Clean Water Act (CWA) Section 404(b)(1) Guidelines, 40 CFR Part 230 ("Guidelines").

The use of an "overall project purpose" that is more constrained than the "basic project purpose" in the alternatives analysis may result in limiting the evaluation of practicable alternatives. EPA believes the basic project purpose listed in the SDEIS (...to provide water...) is an appropriate basic purpose and need statement for Clean Water Act permitting for this type of project.

The re-evaluation of screening criteria (in Chapter 2) incorporates a regional project criterion, which implements a minimum element storage capacity of 25,000 AF, a minimum firm yield of 12,000 acre-feet per year applied to sources of water, and a perpetual ownership requirement. We are concerned that, these criteria may limit consideration of alternatives that could potentially provide a portion of long-term water supply with less impact than the alternatives that were analyzed.

While regional water supply projects are an important option to consider when meeting water demand, regional projects, especially when they involve new reservoirs, are not necessarily the least environmentally damaging means to meet the basic project purpose. A regional project coordinated by

the District could incorporate a cooperative water planning effort to maximize water supply efficiency. The particular regional project criterion used for NISP constrains the alternatives available.

The SDEIS appears to implement the firm yield criterion as a two-pronged requirement for both a firm yield of 12,000 acre-feet-per-year per water source and perpetual ownership by Northern. This represents a change from the 2007 HDR NISP Alternatives Evaluation Report Volume II which indicates that "The firm yield screening criterion simply requires that viable water supply sources must be capable of providing a fixed (firm) amount of water yield for every unit of time. For NISP, this means water must be provided in sufficient amounts on an annual basis to satisfy current and projected demands (Volume II, p. 8)." Neither a volume nor perpetual ownership were specified. It is not clear to us why this more inclusive screening criterion was not carried forward. As noted in the Preamble to the Guidelines, for "an alternative to be practicable, it must be reasonably available or obtainable. However, the mere fact of ownership or lack thereof, does not necessarily determine reasonable availability." 45 Fed. Reg. 85336, 85339 (Dec. 24, 1980). It is also not clear why ownership in perpetuity is necessary to meet the project purpose. Northern is a regional water supply entity that engages in many water transactions to supply its constituents with water and not all transactions are contingent upon Northern's outright ownership of a water right. It seems reasonable that Northern could manage water sources (including some below the minimum capacity criterion) in ways that could supply the participants with consistent firm yield without perpetual ownership.

The SDEIS presently does not fully document the rationale for dismissing several components from consideration, including conservation, rotational fallowing/agricultural leasing, acquisition of C-BT Units, and developing displaced water.

- ***Conservation.*** Alternatives considered and retained do not include conservation savings or programs that could increase conservation levels either as an alternative or means to reduce demand. The SDEIS interprets past declines in water usage attributable to conservation gallons per capita per day (GPCD) to mean that nothing more can be achieved. Water demand reductions attributable to conservation savings are indicative of the important role conservation has already, and should continue to, play in these communities. For example, the Western Resource Advocates (WRA) report applies active conservation and projects conservation savings of 6,401 AF by 2030 and 20,482 by 2060 towards NISP participant demands. The EPA recommends the Final EIS explicitly address whether and how the new growth and development anticipated by this project will utilize smart growth or other water conservation measures. The EPA also recommends the Final EIS incorporate smart growth and conservation into the Conceptual Mitigation Plan or draft project conditions. Their incorporation would help assure that effects are avoided and minimized.

- ***Rotational Fallowing/Agricultural Leasing***. The SDEIS discusses the rotational fallowing concept as an agricultural-municipal leasing arrangement. It screens out the concept as failing the firm-yield criteria (when irrigators retain ownership of water rights) and also based on the proven technology screening criteria. Screening based on the firm yield does not appear to be based upon failure to meet the 12,000 AFY minimum but rather a conceptual basis related to permanent ownership for the water source, and we disagree with this screening criterion. As discussed in the SDEIS supporting document, the Healthy Rivers Alternative Evaluation, it

appears reasonable and practicable for municipalities and other water supply entities to purchase the water rights and lease them back to irrigators (p. 58, Figures 5-2 to 5-17).

The SDEIS also screens out this component based upon the proven technology criteria. The EPA understands the legal and institutional difficulties of agricultural leases in Colorado but also acknowledges the significant efforts by the Poudre Water Sharing Working Group, the State of Colorado (discussed below), and the Western Governors' Association to expedite and fund alternative agricultural transfer methods (ATMs).

Considerable efforts to facilitate the development and implementation of ATMs in Colorado have continued since Senate Bill 07-22 authorized the Colorado Water Conservation Board (CWCB) to develop a grant program in 2007. Further support was provided in 2013 when House Bill 13-1248 authorized CWCB to administer a pilot program (of up to 10 projects, each lasting up to 10 years) to test the efficacy of fallowing-leasing as an alternative to permanent agricultural dry-up. A project application for a fallowing-leasing project in the Lower Arkansas Valley ("Super Ditch") was approved in January, 2015, to begin implementation for the 2015 irrigation season. During the 2015 Legislative session, the pilot program allowing agricultural land-owners to lease to municipalities was expanded to allow for leasing of water rights for other agricultural, industrial, environmental and recreational uses. In Southern California,[4,5] open market forces associated with ATMs and the existing 35 to 45 year contracts for agricultural water leases in Southern California[6,7] demonstrate that agricultural leasing is a proven method that may be a less environmentally damaging practicable alternative for this project, unless demonstrated otherwise by the project proponent.

The SDEIS does not provide justification demonstrating that practicability criteria under the Guidelines are met, including existing technology or logistical constraints regarding ATMs. In light of the ongoing efforts highlighted above, it seems difficult to assert ATMs are unproven technology, particularly given the extended planning horizon (2060) for this project. The EPA recommends the Final EIS evaluate this alternative, in combination with others, to address the project Purpose and Need and as a means to reduce impacts on agriculture. Statewide agricultural losses are expected to be between 500,000 to 700,000 acres by 2050 due to urbanization, declining aquifers, inadequate augmentation supplies for out-of-priority well pumping, enrollment of lands in conservation programs, and compact compliance.

- ***Acquisition of C-BT Units.*** Chapter 2 identifies a 12,000 AFY firm yield screening criterion (pp. 2-10). It appears that CBT units are still available and that the difficulty in acquiring them relates to municipal caps put in place by Northern. Institutional barriers should not be used to limit alternatives that may otherwise be practicable. The SDEIS does not explore whether Northern could lift or modify the caps it has in place. It is also not clear why NISP Participants are unlikely to acquire 20,000 to 24,000 of the remaining 28,000 CBT units available for transfer to municipal ownership as they "would be able to acquire smaller amounts of CB-T to augment their overall supply portfolio." CB-T water can be reused to extinction and appears to be an

[4] Palo Verde Irrigation District-Metropolitan Water District Program: http://www.pvid.org/PVID-MWD.html
[5] San Diego County Water Authority-Imperial Irrigation District Water Transfer: http://www.sdcwa.org/water-transfer
[6] Palo Verde Irrigation District-Metropolitan Water District Program: http://www.pvid.org/PVID-MWD.html
[7] San Diego County Water Authority-Imperial Irrigation District Water Transfer: http://www.sdcwa.org/water-transfer

important piece of the northern Front Range water supply. This alternative appears to also continue to be a potential less environmentally damaging practicable.

- ***Developing Displaced Water.*** Chapter 2 dismisses displaced water as an alternative or part of an alternative because it does not meet the "regional project" criterion (as discussed earlier). The EPA's comments on DEIS's Purpose and Need statement described that a "regional project" coordinated by Northern does not necessarily require a single storage project as a common solution. A potential cooperative water planning effort to maximize water supply efficiency could also be a solution. Our DEIS and these SDEIS comments provide our rationale for not excluding this component under the "regional project" criteria. As mentioned previously, institutional barriers should not be used to limit alternatives that may otherwise be practicable. The EPA recommends re-evaluating the potential for displaced water acquisition to meet a portion of the project demand because a portion of the growth projected (that drives the demand shortfall) is likely to occur on agricultural land.

VII. No Action Alternative

Although the SDEIS does not evaluate new alternatives, it has made changes to alternatives since the Draft EIS. It has revised the No Action Alternative to include Cactus Hill Reservoir, a component of two action alternatives (Alternatives 3 and 4) and agricultural transfers (which were previously a component of Alternative 4 in the Draft EIS) (p. 2-2). The No Action Alternative is described as being the non-regional alternative, but seems to miss the opportunity to incorporate alternatives that were screened out due to not being regional in nature (i.e., development of displaced water, reuse, rotational fallowing, and the acquisition of C-BT units). The EPA recommends the Final EIS address whether these components could be part of the No Action Alternative.

VIII. Groundwater Effects

In addition to the comments on the CTP provided in the cover letter, the EPA continues to recommend conducting an assessment of the model's groundwater component through comparison to groundwater table data and flow flux information. It is our understanding that groundwater table information to enable such an evaluation is currently being collected at transects along the Poudre River. If the model validation run indicates that the model is unable to replicate the validation data, consideration of a means to compensate for the existing model will be necessary. One way to supplement the existing model is to employ a mechanistic model that uses an hourly time-step based upon the USGS gage information. A less rigorous, intermediate option is to mechanistically model three to five reaches of particular interest (e.g., due to water quality limitations, dry up, etc.) on a small spatial and temporal scale and compare those outputs to the CTP hydrologic model and the associated disaggregation output. This approach would not represent the entire stream affected by the project and the time-step selected could also miss shorter term water quality effects associated with CWA thresholds, but it would provide an improved picture of the types of groundwater effects that could be caused by the project.

IX. Cumulative Effects

The Cumulative Effects analyses in Chapter 5 compare cumulative effects to a future conditions hydrology (p. 5-16). The EPA recommends adding a comparison against current conditions hydrology and resource conditions in order to enable characterization and understanding of cumulative effects relative to current conditions and the project.

X. Climate Change and Green House Gases

The EPA appreciates the SDEIS's analysis of hydrologic effects and changing water supply associated with climate change. As the SDEIS notes, climate change will affect hydrology within the Poudre and Platte River basins. Notably, evaporation rates are anticipated to increase by 25% and irrigation water requirements are anticipated to increase by 15% to 25%. These factors may increase the likelihood that the Grey Mountain water right may need to be augmented for the initial fill of Glade Reservoir (pp. 5-42 and 5-28). The EPA also appreciates the SDEIS's presentation of annual carbon dioxide emissions due to pumping at full project operation. The conceptual mitigation plan identifies system efficiency and in-system small hydropower opportunities (p. 104). We recommend the Final EIS clarify whether these measures are intended, or have the capability, to offset the project's energy use and carbon dioxide emissions. The EPA also recommends that the Final EIS assess whether there are additional opportunities for the proposal to incorporate GHG reduction measures as well as measures that would increase the project's resilience to foreseeable climate change.

XI. Oil and Gas Wells

The EPA appreciates that the Conceptual Mitigation Plan identifies the intent to develop protocols and measures (Appendix F, p. 56) to prevent impacts due to oil and gas wells in the footprint of Galeton Reservoir. The EPA recommends these protocols be included in the Final EIS, and that they also apply to any oil and gas wells in the footprint of Cactus Hill Reservoir. It is unlikely the plugging and abandonment plans for plugged oil and gas wells in these areas were designed in anticipation of the wells being under a reservoir. To prevent leakage from these wells into the reservoirs, we recommend that care be taken to assure that all wells in the footprint are reliably and effectively plugged prior to filling the reservoir. We also recommend the proponent assess whether there are oil and gas related contaminants in these areas that could be mobilized by surface or groundwater fluctuations associated with reservoir operations. Any oil and gas related contaminants within the zone of water influence at Galeton and Cactus Hill Reservoirs should be remediated prior to filling the reservoir.

XII. Agricultural Impacts

Through the SPWCP, which is proposed as a component of all three action alternatives in order to enable upstream storage in either Glade or Cactus Hill Reservoirs, irrigation water quality would impact users of the Larimer-Weld and New Cache Canals because the source water would switch from the Poudre to the Platte River. The Platte River is higher in total dissolved solids and salinity. Across the land use, surface water quality and socioeconomics sections, the SDEIS discussion of effects of this change in source water is limited. While the Land Use Section of Chapter 3 (Section 3.17.1.1) includes important information regarding the agriculture that will be affected,[8] Chapter 4 does not include a parallel agricultural impacts section for the action alternatives. The surface water quality section identifies a minor to moderate impacts to agricultural users (Table 4-50). It is not clear what specific information was considered to support this characterization, including whether the full range of potential effects was considered. SPWCP water (i.e., Galeton releases of South Platte water) will make up 1 to 100% of water in the Larimer-Weld Canal and 0 to 69% of water in the New Cache Canal (p. 4-124 in preliminary SDEIS).

The EPA recommends incorporating information into the Final EIS from the 2015 Crop Production Technical Report regarding the studies that support the effects analyses, the specific effects related to crop type and affected acreage, and any outreach that has been (or will be) conducted to inform the

[8] 2015 Cactus Hill and Galeton Crop Production Technical Report, accessed July 14, 2015: http://www.nwo.usace.army.mil/Missions/RegulatoryProgram/Colorado/EISNISP.aspx.

agricultural community of the potential impacts. For example, Hoffman 2004[9] identified crop yield losses across a range of conditions and proportions of SPWCP water ranging from 25 to 100%. Zuber 2007[10] identified losses for specific crops based upon all SPWCP water.

The 2015 Crop Production Report also describes monitoring and possible mitigation measures, but the Conceptual Mitigation Plan does not identify all of these measures and indicates it will investigate opportunities for the remainder (Appendix F, p. 103). The EPA recommends the Conceptual Mitigation Plan include the mitigation measures identified on p. 42 of the 2015 Crop Production Technical Report in addition to outreach to enable irrigators to understand, and prepare for, impacts.

[9] Hoffman, GJ. 2004. Impact of Utilizing Water Supplies from the South Platte Water Conservation Project on Crop Production. Prepared for Northern Colorado Water Conservancy District.

[10] Zuber, R. 2007. Analysis of Salinity Data from South Platte and Cache la Poudre Rivers and Impact on Crop Yield; Comparison to Hoffman Report. Submitted to U.S. Army Corps of Engineers.