

THE FARM FACTS ABOUT NISP

If Built, the Northern Integrated Supply Project Would Severely Impact Agriculture in Northern Colorado

March 15, 2011



Subdivisions are marching across northern Colorado, consuming farm land and drying up the agricultural economy. Photo by Save the Poudre.

The Northern Integrated Supply Project (NISP) along with Glade and Galeton Reservoirs, threatens the agricultural economy of northern Colorado. Here's why:

1. NISP would accelerate the buy-up and subdivision of irrigated farms in northern Colorado;
2. NISP would accelerate salinization of productive crop lands;
3. NISP would end most "free river" diversion opportunities and impact many existing water users;
4. NISP would submerge and divide productive agricultural land;
5. The "Initial Fill" and ongoing diversions into Glade and Galeton Reservoirs are likely to come from northern Colorado and West Slope farm water.

NISP is not like the Colorado Big Thompson (C-BT) project. NISP would take water away from agriculture, not bring new water in for agriculture. NISP would help force the dry-up of 67,000 acres of irrigated farms in northern Colorado, and NISP could directly cause the temporary or long-term dry-up of an additional 56,000 acres of irrigated agriculture in northern Colorado and the West Slope.

If NISP is built, approximately 123,000 acres of agricultural land – 1/6th of all of the irrigated land in northern Colorado – could be negatively impacted.

1. NISP Would Accelerate the Buy-Up and Subdivision of Irrigated Farms in Northern Colorado

The communities that want to build NISP currently have a geographic footprint of 51,000 acres¹ and are projected to grow in population thus sprawling geographically across the landscape² around their current footprint by the year 2050. Based upon current growth projections³ and current population density levels for NISP communities (3.47 people/acre⁴) stated in the NISP Draft Environmental Impact Statement (DEIS), NISP communities would likely occupy a geographic footprint of 127,000 acres in the year 2050, which is 76,000 acres more than today⁵. Given that 63% of the land in the NISP participants growth area is currently occupied by irrigated agriculture⁶, NISP communities will grow over about 48,000 acres of irrigated land⁷.

The current and projected boundaries of northern Colorado cities, which include many NISP communities, is illustrated in Figures 1 and 2 to the right⁸.

Many of the cities participating in NISP would fund the project through long-term debt, repaid through “tap fees” (fees levied on new homes). NISP towns would borrow approximately \$400 million to pay for the project resulting in 30-year debt loads for many of these towns⁹. This debt would likely require cities to encourage even faster growth and expand even farther into adjacent agricultural lands.

This cycle of water-debt-growth will continue, increasing the buy-up and subdivision of farms around NISP communities. That's why we say that NISP would accelerate the buy-up and subdivision of irrigated farms in northern Colorado.

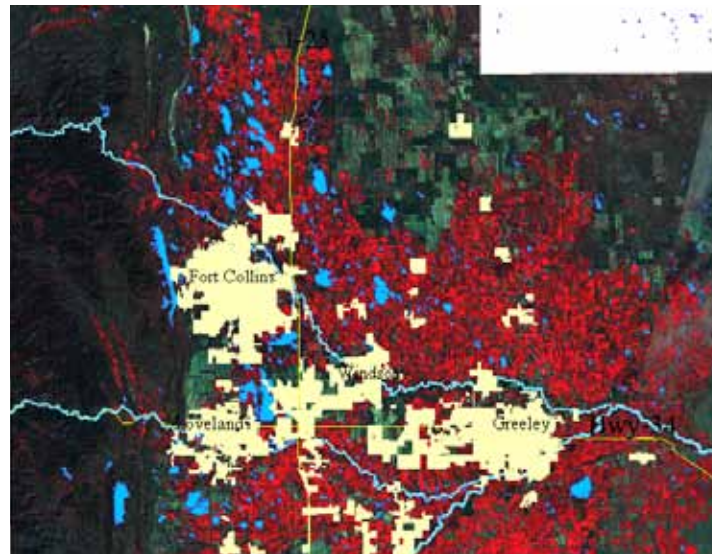


Figure 1. Recent footprint of a portion of Larimer and Weld County communities (yellow areas) and irrigated agricultural land (most of the red area).

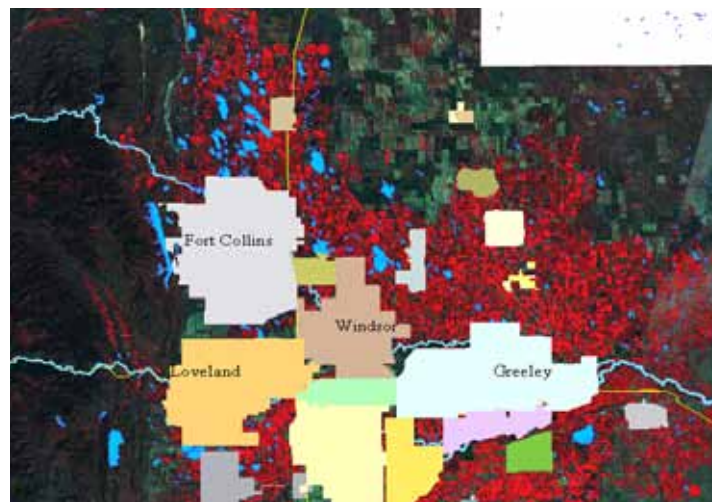


Figure 2. Anticipated build-out of communities in a portion of Larimer and Weld Counties (colored areas).

¹ Colorado Division of Local Government, State Demography Office. <http://dola.colorado.gov/dlg/demog/census.html>
² South Platte Water Conservation Project, Regional Water Demand Study, Draft Report. Northern Colorado Water Conservancy District. February 2000.
³ Ibid.
⁴ Ibid.
⁵ The Colorado State Demography Office predicts the NISP subscribing communities will add 263,000 residents by the year 2050. Current population densities of 3.47 people per acre would lead to a build-out of 76,000 acres.

⁶ U.S. Department of Agriculture, National Agricultural Statistics Service. http://www.nass.usda.gov/Statistics_by_Subject/index.php?sector=CROPS
⁷ 76,000 acres of developed farmland X 63% irrigated land = 48,000 acres of irrigated land developed by 2050.
⁸ Images provided by the Northern Colorado Water Conservancy District (NCWCD) and the City of Greeley.
⁹ Red Oak Consulting. November, 2006. NISP Master Financing Plan Final Report, prepared for the Northern Colorado Water Conservancy District.

2. NISP Would Accelerate Salinization of Productive Crop Lands

If the proposed NISP/Glade and Galeton Reservoirs were built, serious soil salinization would increase in parts of northern Colorado. Several thousand acres of irrigated farmland in the region using South Platte River water are already considered “salt affected,”¹⁰ meaning salt concentrations are dangerously high for growing many valuable crops. Using irrigation water with higher dissolved salt concentrations than is presently being used would likely permanently put many or most of these at-risk crop fields out of production. Here’s why:

As currently planned, NISP would replace about 23,000 acre-feet of pure Poudre River water with far more salty water from the South Platte River downstream from the confluence of the South Platte and the Poudre¹¹. This replaced water would be used to irrigate more than 13,000 acres of farmland off of the New Cache and Larimer-Weld canals in northern Colorado¹². Water exiting the mouth of Poudre Canyon has a salt concentration of about 50 milligrams per liter¹³. The South Platte River below the confluence

with the Poudre has a salt concentration around 950 mg/liter¹⁴ due to our salty soils, current irrigation practices, and upstream development (Figure 3). It is this highly saline water that would be diverted downstream from Greeley into the proposed Galeton Reservoir and then be pumped to the Larimer-Weld and/or New Cache canals for direct use by irrigators who are presently irrigating with nearly pure Poudre water (Figure 4)¹⁵. In addition, the shallow 45,000 acre-foot Galeton Reservoir

Average Salinity Concentrations

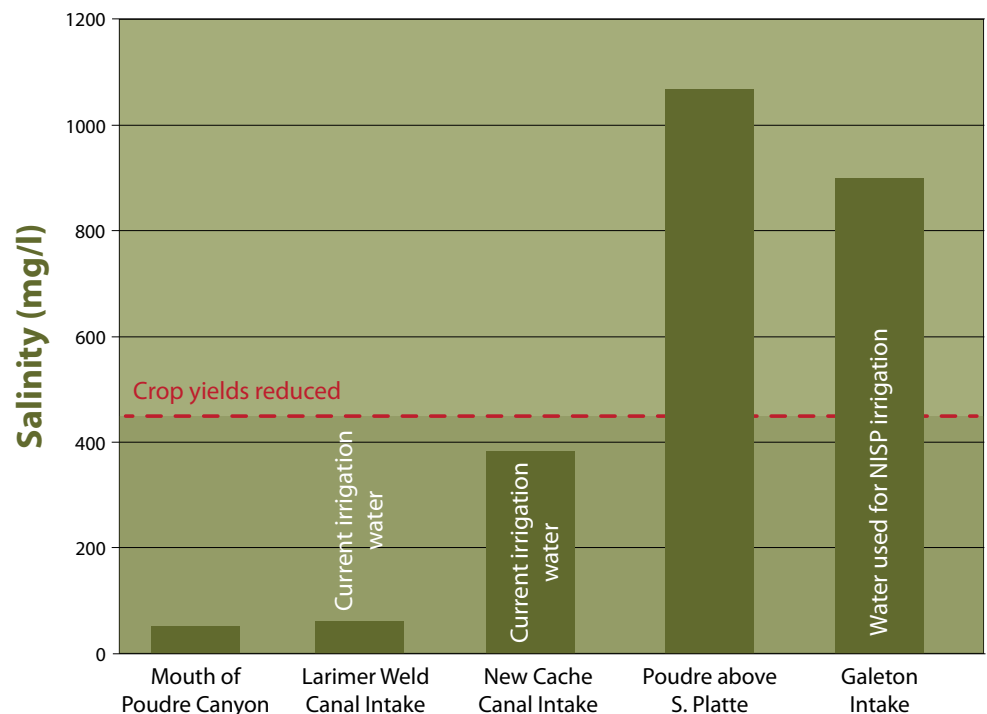


Figure 3. Salinity concentrations of water from the mouth of Poudre Canyon to the proposed Galeton Reservoir. Higher salinity levels decrease crop production.

¹⁰ West Greeley Soil Conservation District. 1999. Salinity levels in soil may be rising. The River Basin, 4: 5-6, as cited in Haby and Loftis (2010).

¹¹ Mountain River Associates, Inc. 2005. Potential effect of Northern Integrated Supply Project water exchanges on irrigation water quality. Colorado Weld County District Court 19th JD, Filing ID: 5488582, and DEIS

¹² Colorado Water Conservation Board, Technical Memorandum: State of Colorado Current and 2050 Agricultural Demands. July 16, 2010. <http://cwcbweblink.state.co.us/WebLink/ElectronicFile.aspx?docid=144104&searchid=bf933fd3-936d-4ee8-b767-4e617f8e3286&&dbid=0>. The State Engineer’s office estimates that each acre of irrigated land in the South Platte basin requires 1.8 acre-feet of applied irrigation water. Therefore, 23,000 acre feet of water divided by 1.8 acre feet per acre equals 13,000 acres.

¹³ Gates, T.K. 1999 (Draft). Assessment of Water Quality for Irrigation under the South Platte Water Conservation Project. Submitted to the Northern Colorado Water Conservancy District. 69 pages. <http://save-thepoudre.org/docs/gates-salinity-report-1999.pdf>

¹⁴ Haby, P.A., and J.C. Loftis. 2010. Assessment of dissolved solids concentrations and loads in the South Platte River Basin, northeastern Colorado. U.S. Committee on Irrigation and Drainage Conference, Fort Collins. 17 pp; and Haby, P.A., and Loftis, J.C., 2000, Salinity Characterization and Source Assessment in the South Platte River Basin, Northeastern Colorado, in Watershed Management 2000 - Science and Engineering Technology for the New Millennium, Fort Collins, CO, American Society of Civil Engineers.

¹⁵ Figure was adapted from Figure 2.2 in the NISP DEIS.

would be evaporation-prone, losing about 5-10% of its volume annually to evaporation which would increase the salinity of the stored water¹⁶. To make matters even worse, more municipal water development upstream on the South Platte River, such as Aurora's Prairie Water Project, will further exacerbate the river's salinity¹⁷. Given all of these factors, the salt concentrations in irrigation waters delivered from Galeton could hit 2,000 mg/liter¹⁸.

Salt sensitive crops such as corn, alfalfa, dry beans, and most root vegetables like carrots and onions are grown on more than 70% of the irrigated acres of the South Platte region¹⁹. The use of this highly saline water will lead to crop yield problems and permanent salinization on up to 20% of fields receiving water from Galeton (Figure 3)²⁰. This could lead to a significant decrease in crop yields²¹ and the loss of over 3,000 acres of irrigated agriculture²².

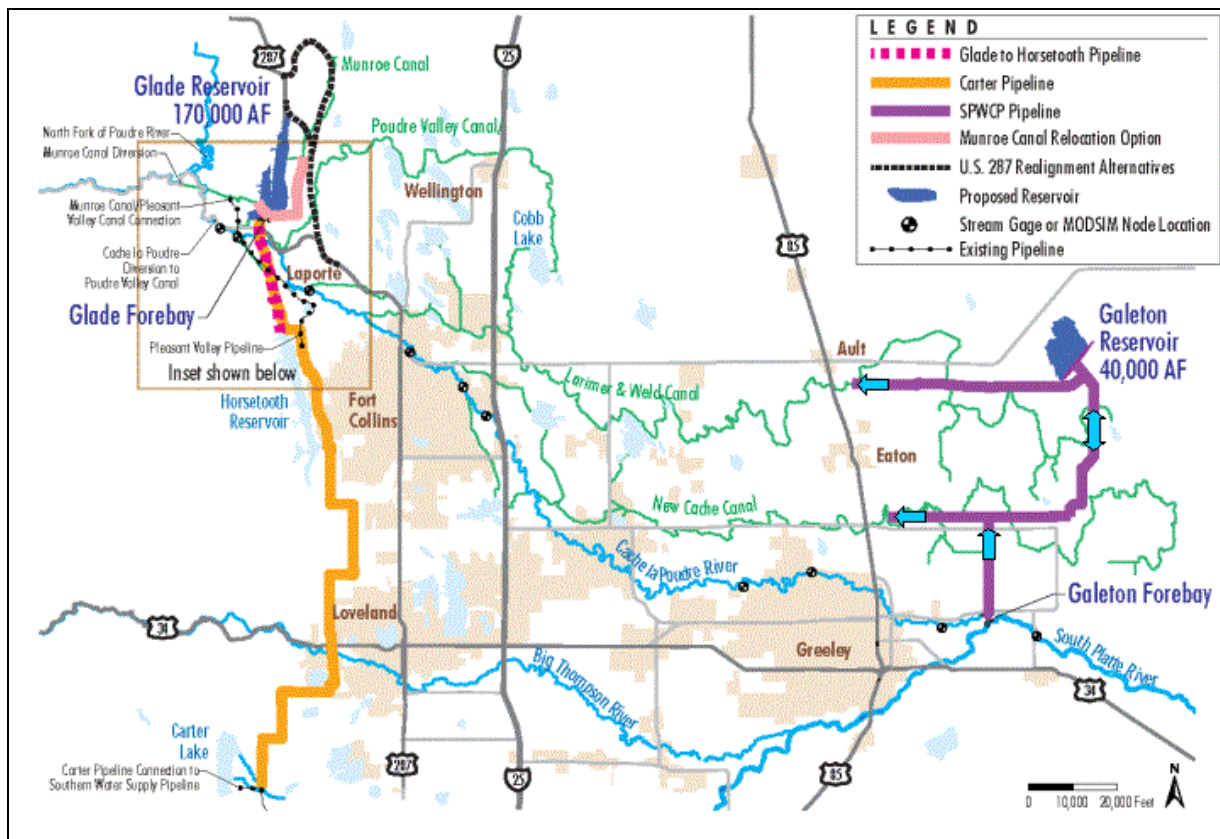


Figure 4. NISP piping and delivery of South Platte water to irrigated farm land.

- ¹⁶ Gates, T.K. 1999 (Draft). Assessment of Water Quality for Irrigation under the South Platte Water Conservation Project. Submitted to the Northern Colorado Water Conservancy District. 69 pages.
- ¹⁷ Haby, P.A., and J.C. Loftis. 2010. Assessment of dissolved solids concentrations and loads in the South Platte River Basin, northeastern Colorado. U.S. Committee on Irrigation and Drainage Conference, Fort Collins. 17 pp.
- ¹⁸ Professional judgment based on recently measured maxima on the Big Thompson River at La Salle, the Cache la Poudre near Greeley and the South Platte at Kersey (1685, 1372, and 1267 mg/l, respectively, as given in Haby, P.A., and J.C. Loftis. 2010. Assessment of dissolved solids concentrations and loads in the South Platte River Basin, northeastern Colorado. U.S. Committee on Irrigation and Drainage Conference, Fort Collins. 17 pp.

- ¹⁹ U.S. Department of Agriculture, National Agricultural Statistics Service. http://www.nass.usda.gov/Statistics_by_Subject/index.php?sector=CROPS
- ²⁰ Gates, Timothy. Draft 1999. Assessment of Water Quality for Irrigation Under the South Platte Water Conservation Project. Under contracted project "Development of Recommended Water Quality Criteria for The South Platte Water Management Project", Submitted to Northern Colorado Water Conservancy District.
- ²¹ Ibid.
- ²² Dennehy, K.F., Litke, D.W., Tate, C.M., Qi, S.L., McMahon, P.B., Bruce, B.W., Kimbrough, R.A., and Heiny, J.S.. 1998. Water quality in the South Platte River Basin, Colorado, Nebraska, and Wyoming: U.S. Geological Survey Circular 1167, 38 p., <http://pubs.usgs.gov/circ/circ1167/circ1167.pdf>.

3. NISP Would End Nearly All "Free River" Diversion Opportunities and Impact Many Existing Water Users

Adverse impacts to agriculture would be felt not only within the Poudre River basin but in the South Platte River basin downstream of its confluence with the Poudre. The "Grey Mountain" water right, about one-half of all of the water proposed to be used by NISP²³, is currently being used by downstream irrigators every two or three years under what are called "free river" conditions – times when there is no water-right call on the river

and all diversions are fair game or "free."²⁴ The loss of this ~20,000 acre-feet of "free" water to irrigators would lead to the dry-up of, or reduced yield on, over 11,000 acres of irrigated crop land in the South Platte River basin²⁵.

In addition, NISP would impact a variety of existing water users both upstream and downstream from the proposed project, including a diversity of agricultural, municipal, industrial, and governmental water rights holders²⁶. These impacts would involve diverters, water storage rights, and well pumping. It is unclear at this time exactly which junior water rights would be affected under any given water supply condition, but it is clear that existing users would have less water available if NISP were built (Figure 5)²⁶.

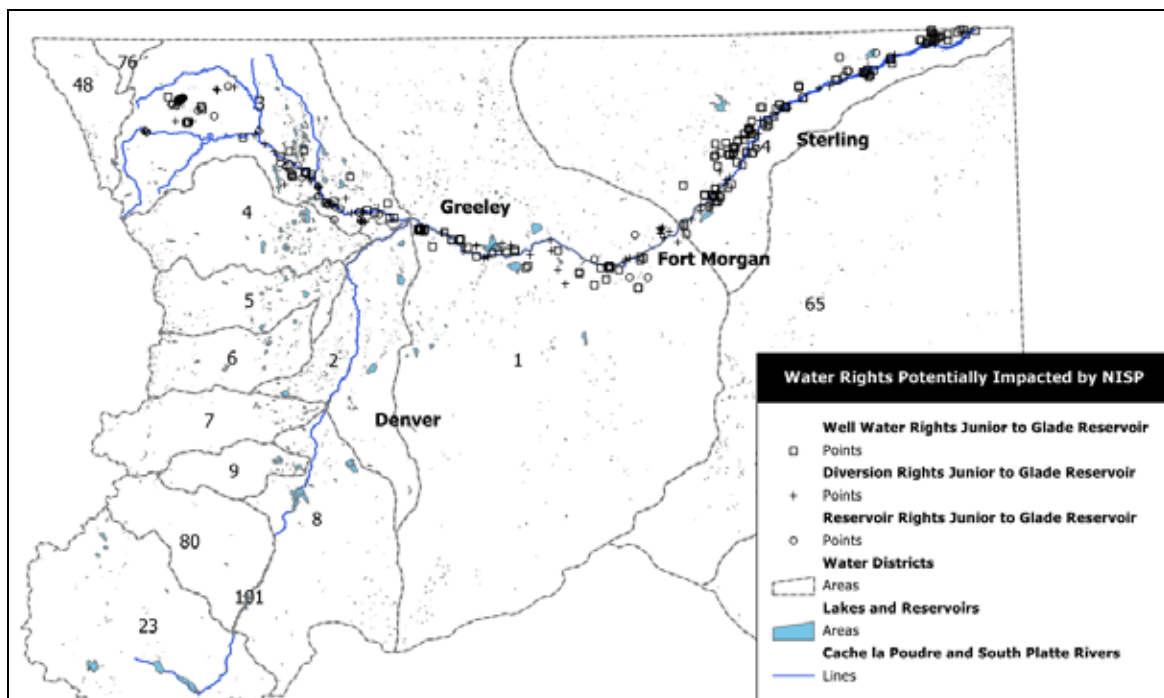


Figure 5. Diversion, reservoir, and well water rights potentially impacted by NISP.

²³ U.S. Army Corps of Engineers. April, 2008. Northern Integrated Supply Project Draft Environmental Impact Statement.

²⁴ Colorado Foundation for Water Education. 2009. A Citizen's Guide to Colorado Water Law. <http://www.cfwe.org/flip/catalog.php?catalog=waterlaw>.

²⁵ Colorado Water Conservation Board, Technical Memorandum: State of Colorado Current and 2050 Agricultural Demands. July 16, 2010. The State Engineer's office estimates that each acre of irrigated land in the South Platte basin requires 1.8 acre-feet of applied irrigation water. Therefore 20,000 acre-feet of irrigation water is used to irrigate over 11,100 acres of farmland.

²⁶ Canyon Water Resources, LLC. 2010. Water supply impacts of the Northern Integrated Supply Project (NISP). Report prepared for Save The Poudre: Poudre Waterkeeper <http://www.savethepoudre.org/docs/2010-12-01-water-supply-impacts-of-nisp.pdf> Memorandum Re: Riverside Irrigation District's objection to consolidated case nos. 92-CW130, Northern Colorado Water Conservancy District's South Platte Water Conservation Project. E-filed document #5483218, Weld County District Court, Apr 1, 2005. 5 pp.

4. NISP Would Submerge and Divide Productive Ag Land

The land that the proposed reservoirs (Glade or Cactus Hill, and Galeton) would inundate is currently used for irrigated crop production and livestock grazing. If built, and depending upon which of the alternatives might be chosen, approximately 5,000 acres of productive agricultural land would be buried under the reservoirs²⁷. Additionally, if Glade were built, Highway 287 north of Fort Collins would be rerouted to the east through the heart of the largest remaining tract of productive agricultural land in Larimer County which could then be devoured by subdivisions.

5. The “Initial Fill” and ongoing diversions into Glade and Galeton Reservoirs are likely to come from northern Colorado and West Slope farm water

The NISP DEIS states that the “Initial Fill” of water – up to 100,000 acre feet – for Glade Reservoir could come from West Slope (Colorado River) water that is 1) already diverted to northern Colorado and rented to farmers, and 2) not yet diverted to the Front Range but used on farms on the West

Slope²⁸. Additionally, if Glade Reservoir is built, it could be re-filled with agricultural water at any time – this concept, termed “operational flexibility,” would allow NISP to divert more farm water to try to keep Glade from going empty²⁹. Both sources of water would affect up to 56,000 acres of productive farm and ranch land in the Colorado and South Platte River basins³⁰.

Save the Poudre, and others³¹ believe that it is likely that the DEIS has overstated the potential yield from NISP. The Grey Mountain water right component of NISP has only been available in significant quantities, on average, once every few years³², so the proponents have requested “operational flexibility” to obtain additional water to meet firm yield commitments. Where would this dry-year water come from? Farm water. The DEIS calls for:

“The ability to enter into dry-year leasing or interruptible supply contracts with agricultural irrigation users to meet project water needs when drought conditions are worse than those evaluated by the NISP hydrology model.”³³

Why does the DEIS say this? The DEIS model was based on the years 1950-2001, which were far wetter years that do not reflect the extended droughts northern Colorado has experienced recently or prior to 1950³⁴. In fact, from 2000 to 2009 during the growing season during the months of May through July, there have been only 66 days when diversion records indicate that the Glade Reservoir storage right would have been in priority³⁵.

²⁷ U.S. Army Corps of Engineers. April, 2008. Northern Integrated Supply Project Draft Environmental Impact Study.

²⁸ U.S. Army Corps of Engineers. April, 2008. Northern Integrated Supply Project Draft Environmental Impact Study. Section 2.4.1.3: 2.4.1.3 Sources of Water for Initial Fill of Glade Reservoir

“The EIS evaluations of Glade Reservoir are based on a planned initial fill volume of approximately 100,000 AF at the time of project start-up. However, the anticipated sequence of NISP construction is to build the Glade Reservoir complex followed by the SPWCP. Until the SPWCP is online, Glade Reservoir will be wholly dependent on the Grey Mountain water right. This water right has the capability of yielding water in about 4 out of 10 years. Modeling indicates that there can be several years in a row of divertible flow followed by as many as 8 years with no flow available. Therefore, it is possible that divertible flows from the Poudre River may not be available under the Grey Mountain water right to fill Glade Reservoir at the start of NISP.”

²⁹ Ibid.

³⁰ The NISP DEIS requests “Operational Flexibility” to use up to 100,000 acre-feet of agricultural water for the initial fill of the Glade

Reservoir. That amount of water would irrigate up to 56,000 acres of farmland. 100,000 acre-feet of water ÷ 1.8 acre-feet per acre of irrigated land = 56,000 acres.

³¹ Walter, I.A. 2005. Memorandum Re: Riverside Irrigation District's objection to consolidated case nos. 92-CW130, Northern Colorado Water Conservancy District's South Platte Water Conservation Project. Efiled document #5483218, Weld County District Court, Apr 1, 2005. 5 pp.

³² GEI. 2006c. Technical Memorandum No. 3: Northern Integrated Supply Project (NISP) Preliminary Assessment of Cactus Hill Dam and Reservoir and Associated Facilities. Prepared for the Northern Colorado Water Conservancy District.

³³ U.S. Army Corps of Engineers. April, 2008. Northern Integrated Supply Project Draft Environmental Impact Study. Section 2.4.1, p 2-305.

³⁴ HDR Engineering, Inc. 2005. Northern Integrated Supply Project: Hydrologic Model Review. Report prepared for US Army Corps of Engineers. 91 pages plus appendices. https://www.nwo.usace.army.mil/html/od-tl/eis/FINAL_NISPModelReviewTechReport_031005.pdf

³⁵ Canyon Water Resources (2010) Page 4.

CONCLUSION: NISP Would Severely Impact Agriculture in Colorado

NISP would accelerate the buy-up and subdivision of farm land in northern Colorado. Summary of agricultural impacts:

- 48,000 acres dried up due to sprawling subdivisions.
- 3,000 acres dried up or negatively impacted due to heavy salt burden in the soil
- 11,000 acres affected due to loss of “free river” water
- 5,000 acres eliminated due to reservoir construction.
- 56,000 acres potentially dried up (temporary and/or long-term) due to the “Initial Fill” and ongoing filling to keep Glade Reservoir operational.

NISP would help force the dry-up of 67,000 acres of irrigated farms in northern Colorado; NISP could directly cause the temporary or long-term dry-up of an additional 56,000 acres of irrigated agriculture in northern Colorado and the West Slope.

If NISP is built, approximately 123,000 acres of agricultural land – 1/6th of all of the irrigated land in northern Colorado – could be negatively impacted.

NISP is not another Colorado-Big Thompson (C-BT) project. The C-BT project brings about 260,000 acre-feet of Colorado River water into the South Platte Basin every year³⁶. Unlike the C-BT Project, however, NISP would bring no new water into the basin. In fact, NISP would divert at least 40,000 acre-feet of pure, gravity fed water out of our rivers to cities every year³⁷. All of this water is currently available to farmers in the Poudre and South Platte basins and most of it would simply be lost to

agriculture since it would be sent by canal and pipe to NISP participants to serve population growth.

Further, because the South Platte component of NISP (slightly more than one half of the needed 40,000 acre feet) can be “used to extinction,” this water would be lost completely from the river; there would be no return flows from this water at all³⁸.

All of this loss of farms and farm water would have corresponding impacts on the agricultural economy in northern Colorado, including impacts to associated agricultural businesses and small, rural towns throughout the region. Agricultural economists estimate that irrigated farming brings in approximately \$850 per acre to communities in the region^{39,40,41,42}. The subdivision and pave-over of farm land could also dry up the agricultural economy potentially reducing farm-related revenues by up to \$100 million per year⁴³.



Farm diversions and irrigated farm ground could dry up as NISP transfers water to cities. Photo by Save the Poudre.

³⁶ U.S. Department of the Interior Bureau of Reclamation. 2009. Colorado Big Thompson Project. http://www.usbr.gov/projects/Project.jsp?proj_Name=Colorado-Big+Thompson+Project.

³⁷ U.S. Army Corps of Engineers. April, 2008. Northern Integrated Supply Project Draft Environmental Impact Study.

³⁸ Canyon Water Resources (2010) page 2.

³⁹ Colorado Water Resources Research Institute. April, 2005. "Lower South Platte Forum: Valuing your Water". Colorado State University.

⁴⁰ Howe, Charles W. and Goemans, Christopher. October, 2003. "Water Transfers and Their Impacts: Lessons from Three Colorado Water Markets". Journal of the American Water Resources Association.

⁴¹ Smith, Dan. February, 2005. Agronomic Perspectives on Irrigation Water Conservation to Meet Growing Urban Demands. Colorado Water Resources Research Institute Newsletter, Colorado State University.

⁴² Thorvaldson, Jenny and Pritchett, James. June, 2007. "Economic impact analysis of reduced irrigated acreage in four river basins in Colorado". Colorado State University Extension Service Economic Development Report (EDR 07-14).

⁴³ If 123,000 acres of irrigated land is dried up, and if each acre of irrigated land produces \$850/year in farm-related revenue, then approximately \$104,550,000.00 in farm-related revenue could be lost to the region each year. (123,000 x 850 = 104,550,000)

Alternatives to NISP

Save the Poudre supports the ability of NISP communities to meet their water supply needs through projects that do not drain more water out of the Poudre River. Save the Poudre has created a "Healthy Rivers Alternative" to NISP that includes more farm-friendly water supply options such as:

- Smarter growth management policies that consume less farm land and less water
- Aggressive water conservation policies that promote and fund reduced water use in cities and towns.
- Sharing C-BT water and using C-BT water more efficiently.
- Promoting and funding agricultural conservation and efficiency.

- Using water that is transferred from farms directly surrounding NISP communities that will be suburbanized anyway.
- Using water that is transferred from rotational fallowing and "Super Ditch" projects that allow farmers to stay in business.
- Downstream reservoir, gravel pit, or aquifer storage that does not take more water out of the Cache la Poudre River.

Building NISP merely delays the inevitable – smarter, more efficient use of water supplies that better protect northern Colorado's agricultural economy and protect the Cache la Poudre River. For a full copy of the HRA please see: http://savethepoudre.org/docs/stp_healthy_rivers_alternative.pdf.

For a summary: <http://savethepoudre.org/docs/healthy-rivers-alternative-summary.pdf>

The Save the Poudre Coalition is a group of 19 national, state, and regional environmental organizations whose joint mission is to protect and restore the Cache la Poudre River as it flows from the mouth of Poudre Canyon to its confluence with the South Platte River. Save the Poudre is monitoring and commenting on proposed reservoir projects, including the controversial Northern Integrated Supply Project/Glade Reservoir, which will destroy the flows, water quality, and ecological health of the Poudre River.



Photo by Save the Poudre.