Delta-Clearwater Remediation Project
Draft Environmental Assessment

Prepared for:

800 West Evergreen, Suite 100
Palmer, Alaska 99645

Prepared by:

Stevens Village IRA Council
P.O. Box 74016
Stevens Village, AK 99774

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ACRONYMS AND ABBREVIATIONS

ADCCED.....Alaska Department of Commerce, Community and Economic Development
ADEC.....Alaska Department of Environmental Conservation
ADF&G..... Alaska Department of Fish and Game
ADNR..... Alaska Department of Natural Resources
ADOT&PF ..... Alaska Department of Transportation & Public Facilities
APDES .....Alaska Pollutant Discharge Elimination System
ATV..... All-Terrain Vehicle
BLM .....US Bureau of Land Management
CO .....Carbon Monoxide
EA..... Environmental Assessment
EPA ..... US Environmental Protection Agency
HAPs ..... Hazardous Air Pollutants
MLRA ..... Major Land Resource Area
NAAQS .....National Ambient Air Quality Standards
NPDES .....National Pollutant Discharge Elimination System
NPS.....US National Park Service
NMFS .....US National Marine Fisheries Service
NRCS ..... USDA Natural Resources Conservation Service
$PM_{2.5}$.....Particulate Matter < 2.5 microns
PM_{10}.....Particulate Matter < 10 microns
SHPO..... State Historic Preservation Officer
SWCD .....Soil and Water Conservation District
SWPPP ..... Storm Water Pollution Prevention Plan
TESS.....Threatened and Endangered Species System
USACE..... US Army Corps of Engineers
USFWS.....US Fish and Wildlife Service

1.0 PROJECT BACKGROUND

The Delta-Clearwater Flood Control Project is located in the Deltana area of Interior Alaska, approximately 15 miles southeast of the community of Delta Junction, Alaska, within a largely natural area located south of the Alaska Highway near Milepost 1408 (Appendix A, Sheet 1). The Delta-Clearwater River is a near pristine river that is spring fed from an alluvial aquifer. The Delta-Clearwater River watershed is approximately 232,000 acres in size. Major subwatersheds include Sawmill Creek (109,400 acres), Granite Creek (32,000 acres), and Rhoads Creek (55,700 acres). All three subwatersheds are ephemeral systems. The Clearwater Bog, a wetland complex along the upper reaches of the Delta-Clearwater River, contains a network of springs and is the primary water source for the river. The spring fed waters of the Delta-Clearwater River maintain a relatively stable temperature year-round preventing much of the river from freezing during the winter. Given the spring fed nature of the river, it lacks the necessary "flushing flows" needed to flush sediment deposits. Sediment inputs decrease the available spawning habitat, composing a substantial negative impact. The Coho salmon population is especially vulnerable (NRCS, 2009b).

In June of 1995, the U.S. Department of Agriculture Natural Resources Conservation Service (NRCS), in cooperation with the project sponsors (sponsors) including the Salcha-Delta Soil and Water Conservation District (SWCD), Alaska Department of Fish and Game (ADF&G), Alaska Department of Environmental Conservation (ADEC) and the Alaska Department of Natural Resources (ADNR), completed the Delta-Clearwater River PL83-566 Watershed Plan and Environmental Assessment (NRCS, 1995). The primary purpose of the proposed flood control project was to protect the unique Coho salmon and arctic grayling habitat found in the Delta-Clearwater River and the associated Clearwater Bog. The plan depicted reducing sediment deposition that occurs as well as reducing flood and sediment damage to cropland, the Alaska Highway, local roads, and recreation areas. The plan incorporated structural and non-structural measures in the Sawmill Creek subwatershed and structural measures in the Rhoads and Granite Creek subwatersheds.

The measures proposed for the Sawmill Creek subwatershed included 10 grade stabilization structures. Non-structural measures included floodplain easements on 1,300 acres and permanent wetland easements on 1,100 acres. Structural measures proposed for the Rhoads and Granite Creek subwatersheds consisted of a three-mile diversion between the two creeks and 3.8 miles of waterspreading diversions. Also included were 4.3 miles of grassed waterways. These structural measures in the Rhoads and Granite Creek subwatersheds were designed to reduce peak flows in these subwatersheds from approximately 2,700 cubic feet per second to 500 cubic feet per second for the 100-year frequency storm event. They were estimated to reduce the sediment delivery to the Delta Clearwater River by about 84 percent when compared to the 'future without project' condition.

The original project design and reductions in peak flows and sediment delivery were based on a water infiltration rate into the soil profile of 285 cubic feet per square foot per

day. Prior to funding and commencement of construction on the project, concerns were raised questioning the validity of the original infiltration rate estimate. In an attempt to address these questions, test drilling and permeability tests were conducted at various sites along the proposed project in October 1997. The results of this testing are recorded in the Delta Clearwater Geologic Investigation report by Robin S. White, dated November 1997. Based on the data from the geologic investigation, the planners revised the estimated water infiltration rate to 40 cubic feet per square foot per day. This large reduction in the estimated infiltration rate made the original proposed structural measures for Rhoads and Granite Creek subwatersheds ineffective. Therefore, a new plan with a different combination of structural measures was needed, ultimately resulting in the development of the Delta Clearwater River Watershed Plan, Supplemental Plan No. 1 (NRCS, 1998).

The decrease in infiltration rate from 285 cubic feet per square foot per day to 40 cubic feet per square foot per day made it impossible to infiltrate the runoff from a 100-year flood event in the Rhoads and Granite Creek subwatersheds through the planned waterspreading system. The new plan, as set forth in Supplemental Plan No. 1, modified the original plan by reconfiguring the waterspreading system to a single four-mile infiltration basin which would intercept both Rhoads and Granite Creek. One water control structure would be used to divert flow out of the Rhoads Creek channel into the waterspreading diversion. The infiltration basin was expected to dissipate a 50-year storm event. Any flow in excess of a 50-year storm event would be allowed to bypass the infiltration basin and would be conveyed through the watershed to the Clearwater Bog by means of a grassed waterway. The grassed waterway capacity was designed to accommodate bypass flows through the system up to a 100-year flood event.

Construction commenced on Phase I of the project in September 1999 and was completed in July 2001. This phase consisted of approximately 5,000 linear feet of the planned 4 miles of infiltration basin between Rhoads and Granite Creek, along with appurtenant side inlets and training dikes. No work has been performed in the Rhoads/Granite Creek subwatersheds on the north side of the Alaska Highway, nor has any construction work been performed in the Sawmill Creek subwatershed.

Several flow events occurred during construction that demonstrated numerous problems for the watershed project as planned. In response to these concerns, NRCS requested a formal engineering investigation on the project in July 2001. The investigation team conducted their site visit in August 2001.

Phase I site approximately 4 years after construction.
Drill line proceeds from site to Northeast.

The investigation team released the revised Delta Clearwater Watershed Project Engineering Report in February 2002. This report identified three overarching problems with the current plan, as defined in the original Watershed Plan and the Supplemental Watershed Plan No. 1:

1) Substantially lower infiltration rates than were anticipated for the infiltration basin,
2) Dispersive qualities of native soil causing very high erosion susceptibility, and
3) Spillage of flood waters from the existing project works onto private land where no flood easements currently exist.

The revised Engineering Report recommended that NRCS and the project sponsors re-initiate the planning process, considering a wider range of alternatives (NRCS, 2002).

NRCS re-opened the planning process on the entire project in an attempt to address the problems brought forth by the engineering investigation team. Re-planning efforts were on-going from 2003 through 2008 and involved project sponsors, NRCS, other Federal, State, and local agencies, and the general public. Brainstorming was extensive, resulting in 17 primary alternatives being considered. These alternatives ranged from a dam in the upper reaches of the watershed through restoration of the existing project site and the no-action alternative. These alternatives are further discussed in the Alternatives section and in Appendix B of this document.

2.0 PROJECT PURPOSE AND NEED

2.1 Purpose of the Proposed Action

The purpose of the Delta Clearwater Remediation Project is to minimize the threat of sediment input to the Clearwater Bog and Clearwater River from flood flows in the Rhoads/Granite Creek watersheds; thereby providing protection to the valuable aquatic habitat of these systems. The potential for sediment inputs to the Bog and Clearwater River is currently elevated above normal background levels due to the partially constructed infiltration basin, the 1408 levee, and associated project works.

2.2 Need for the Proposed Action

The failure of Phase I of the Delta-Clearwater Flood Control Project has resulted in environmental and safety concerns at the project site as well as increased risk of detrimental off-site impacts over the pre-project condition (NRCS, 2009b). Severe erosion at the project site and increased channelization of surface water have resulted in flows across lands for which no flood easements have been obtained as well as an increased potential for sediment to reach the Delta-Clearwater River and Clearwater Bog during flow events.

The training dikes and side inlets of the constructed portions of the project are actively eroding during all flow events. While most of the coarse sediment from this erosion is trapped in the existing infiltration basin, some of the fine particles escape the project area. Even as large as the existing infiltration basin appears, it does not contain adequate storage to appreciably route or reduce peak flows, even from low return period flow events. The infiltration basin discharges flood flows in a more concentrated manner than did the pre-project topography. This concentrated flow is exacerbated by the build-up of 1408 Road, which acts as a levee and maintains the concentrated flow for two miles from the existing infiltration basin to the Alaska Highway.

Erosion in one of the side inlet channels to the infiltration basin.

The erosion of the project site is of great concern to NRCS and the project sponsors. In its present condition the constructed project actually creates a worse scenario for the Delta-Clearwater River than had this project never been attempted. Anecdotal evidence suggests flows are reaching the project area more frequently than they had historically. Worse, these relatively small flows are traveling further down the watershed before naturally infiltrating, due to the confinement of the flow by the

existing project works. If a larger storm event struck the area, a catastrophic amount of sediment could deposit in the Delta-Clearwater River.

In addition to the problem of sediment, on-site erosion creates many safety hazards. The eroding areas on the project site created numerous gullies ranging from 0.5 feet to 10 feet in height. Heavy recreational ATV and off-road use in the area causes concern of vehicles falling off of the erosion features.

Severe erosion along training dike. Vertical bank height is 10 feet.

A view of erosion from the training dike depicting the risk to ATV and vehicle traffic.

A "drill line" was constructed to the west of the existing infiltration basin along the remainder of the proposed project centerline. The purpose of this drill line was to ground truth existing photogrammetric survey data and conduct infiltration tests every 500 feet along the remainder of the proposed infiltration basin. This drill line is generally stable at present, but the site is not fully revegetating due to recreational traffic. Larger scale flood events may create serious additional erosion problems in the vicinity of the drill line.

Due to the existing project works, concentrated flood waters are flowing across at least two parcels of private property south of the Alaska Highway. No flood easements are in place on these parcels, creating liability concerns for both the agency and the project sponsors.

3.0 ALTERNATIVES

Project re-planning took place between 2003 and 2008. Sixteen different build alternatives were considered during the re-planning effort. Thirteen of these were eliminated early in the planning process, with three revised alternatives being presented at agency and public in December 2007 and January 2008, respectively. These alternatives, including those which were considered but eliminated, are described in Appendix B of this document.

Based on input from the project sponsors, commenting agencies, and the public as well as technical and economic considerations, restoration of the project site has been identified as the agency's preferred alternative. Restoration of the existing project site does not accomplish any of the original goals of the watershed project; it simply seeks to undo, to the extent practicable, the increased erosion, flow concentration, and other negative aspects of the partially completed project.

3.1 Proposed Action

The Delta Clearwater Remediation Project seeks to restore most of the existing construction site to pre-project conditions, to repair the armored splitting channel near the Alaska Highway, and to disperse any concentrated flows in the 1408 vicinity thereby minimizing the potential for erosion and sediment transport. Site restoration would involve removing the training dikes, filling the side inlets, filling the infiltration basin, removing the 1408 levee, providing a reasonable planting medium on the restored surface of the site, either seeding or relying on natural regeneration, repair of the flow splitting channels near the Alaska Highway, and purchasing flood easements for affected private property.

While there are numerous other primitive ATV trails in the area, it is recognized that the 1408 corridor is an important access point to state and federal lands back toward the Granite Mountains. This access is relied upon by hunters, berry pickers, hikers, horseback riders, trappers, and other recreationalists. To that end the contract shall require the contractor to maintain a traffic path through the 1408 corridor with minimal delays to users. At the request of the State of Alaska, the final constructed remediation project shall include a rock armored parking site near the upstream end of existing Side Inlet 1.

Prior to the original construction effort, the 1408 corridor contained a discontinuous, incised channel from the project works to the Alaska Highway. This discontinuous channel was filled and covered over by construction of the 1408 levee. This channel is not being re-created as part of the remediation project, as incised channels concentrate flow just as effectively as levees. This is exactly what NRCS and the project sponsors are trying to avoid. To that end, the 1408 levee will be removed by excavating down to an elevation matching surrounding natural ground topography. This will allow reasonable access through the 1408 corridor while helping minimize flow concentration and the accompanying erosion.

By not reclaiming the material used to fill the old discontinuous channel there will be an inadequate amount of fill materials that can be obtained from the project site. This will necessitate importing fill from an off-site location, most likely the alluvial fan of the Gerstle River. Estimates of how much fill will need to be imported are not yet available as the design is still in progress.

It is currently anticipated that topsoil and decomposed organic material for site restoration would be obtained from berm piles located on nearby agricultural land. These berms are remnant from the land clearing efforts that were part of the original State of Alaska Delta Agricultural Projects, and contain topsoil mixed with high concentrations of organic matter and some woody debris. Using the berm material has numerous benefits as a planting medium. The high concentration of organic matter provides both soil fertility and moisture retention benefits. The berms also serve as seed banks for native vegetation, and the woody debris can be used on the restored site to disrupt overland flow. The berms screened for removal and use will be selected based on criteria that are currently being developed by NRCS. Berms which are growing species which are listed on the State of Alaska list of noxious weeds (11 AAC 34.020) would be eliminated from consideration.

Construction of the Proposed Action is planned to be staged to minimize flood risk to the project site during construction and to comply with environmental requirements such as the Construction General Permit (e.g., the development of a Storm Water Pollution Prevention Plan) and associated best management practices.

3.1.1 Stage 1

Stage one of construction will include construction of approximately 20 water bars along the existing 1408 trail upstream from the project. These water bars will extend from the upstream edge of the project (existing side inlet 1) to approximately 9,500 feet upstream of the project (Appendix A, Sheet 8). The water bars will be spaced at 500 foot intervals and their purpose is to minimize flow concentrations in the 1408 corridor. The water bars will intercept concentrated flow and force the flow a short distance to the east of the 1408 corridor where the water bars will release the flow into well vegetated natural areas where the flow will naturally disperse and continue to move down gradient in the watershed which is generally to the north-northeast and away from the project area. This was the natural direction of flow in this area prior to the 1408 trail becoming incised and capturing sheet flows.

Restoration of the drill line will be the second component of stage one construction. The drill line extends west approximately 9,900 feet from the west end of the existing infiltration basin (Appendix A, Sheets 6 and 7). Restoration of this area consists of spreading existing spoil materials along the drill line back over the disturbed area of the drill line. These existing spoil materials currently lie along the south edge of the drill line and run for the entire length. Construction equipment performing these operations must remain on the already disturbed ground to perform the operations so as not to create additional nick points or other damages. Spreading the existing topsoil and woody debris

in the spoil piles will spur other woody growth and result in a much more rapid return to pre-project conditions.

3.1.2 Stage 2

Stage two of construction is focused along the main diversion basin, side inlets, training dikes, and spoil piles of the existing project works (Appendix A, Sheets 4 and 5). Beginning at the furthest west end of the existing project, construction shall be prosecuted in 1,000 foot sections. Work on each subsequent section shall not commence until the previous 1,000 foot section is restored to approximate pre-project topography and topsoil placement operations are underway. Work to be done in each 1,000 foot section includes removal of the existing training dikes, placing compacted earth fill in erosion scars, side inlets, and the main diversion basin, and removal of the existing spoil piles. The fill material obtained from removal of the training dikes and spoil piles shall be used to fill the areas mentioned above. Additional fill will also be needed and this material shall be obtained from the 1408 levee and an off-site borrow source.

Once all excavation and earth fill in a 1,000 section is complete the disturbed areas shall be covered in an 8 inch lift of topsoil. The topsoil material will consist of field berms from local farms. The field berm materials contain live plant materials such as fireweed, aspen, willow, and cottonwood. The seed stock in the berm materials, the fireweed, and the live woody materials (roots, stems, etc) will comprise the majority of the revegetation effort for the site. Following topsoil placement operations the entire surface will be covered in large woody materials. The woody material surfacing is intended to create microclimates which encourage vegetation establishment, trap small amounts of water which also encourage vegetation establishment and growth, break up and disperse concentrated flows that may develop, and minimize attractiveness of the site for vehicular and ATV traffic which prevents or substantially retards the revegetation process.

The existing diversion basin is approximately 4,900 feet in length so the remediation effort through this portion of the project shall be accomplished in phases of approximately 1,000 feet each. The purpose of removing the fill structures is to eliminate the flow concentration effects of these structures. The primary purpose of filling the side inlets and the diversion basin is to remove the artificially steepened flow gradient across the existing project works which is causing head-cutting on the site and extending upstream into the watershed.

3.1.3 Stage 3

Upon completion of the work at the main diversion basin efforts shall then progress to remediation of the 1408 levee corridor (Appendix A, Sheet 9). Stage 3 work will be broken out into approximately 2,500 foot sections. The total length of the 1408 levee is approximately 9,800 feet so four phases of this work will be required. The fill material of the levee will have already been removed as the materials will have been needed to fill the side inlets and diversion basin. Therefore, the remediation work remaining to be done in this stage will be primarily final grading and water bar construction followed by topsoil placement and spreading of large woody materials as described above for stage two construction. The water bars shall be 12-18 inches high and shall extend across the

full width of the disturbed 1408 corridor. The purpose of the water bars is to prevent any concentrated flow from forming in the 1408 corridor thereby minimizing erosion issues. A 14 foot wide access route will be left clear of topsoil and woody materials. This access route will provide a primitive access through the area similar to what existed pre-1998 when original construction work commenced. At approximately 750 foot intervals a turn out will also be left free of topsoil and woody materials to provide a means for rudimentary 2-way travel.

3.1.4 Stage 4

Stage four of the remediation effort is focused on the splitting channel near the Alaska Highway (Appendix A, Sheet 10). This portion of the project provides some benefit in spreading flows to multiple existing DOT culvert banks under the Alaska Highway. The splitting channel is currently eroding due to improper placement of geotextile during initial construction and puncture of the geotextile fabric from the sharp edges of the rock riprap. Remediation efforts on the splitting channel will involve removal of all rock riprap from the inlet slope and portions of the bottom of the splitting channel as shown on the plan view drawings. The salvaged riprap shall be screened to remove all sediment and fines which will be disposed of by using as earth fill. The area where the riprap was removed shall then be covered with a graded sand filter which is intended to serve as a filter material for the in-situ soils and prevent piping. The sand filter will be covered with non-woven geotextile whose purpose is separation of the sand filter and the bedding material. Bedding materials will be essentially pit run gravel and will be placed on top of the geotextile. The primary purpose of the bedding material is to protect the geotextile from punctures. Finally, the salvaged rock riprap will be replaced over the entire area. It is likely that a small additional amount of rock riprap will need to be produced and delivered to adequately re-create the design riprap blanket thickness due to break down of rock materials from weathering and handling. Stage four (work at the splitting channels) can be done concurrently with either stage 2 or stage 3 work at the contractor's choosing.

3.2 No Action Alternative

This option leaves the project in its existing configuration. The No Action alternative would allow the existing project site to continue to erode and to accumulate sediment. This would continue to exacerbate flooding and erosion concerns, and ultimately result in increased damage to agricultural lands and heightened risk of substantial sediment delivery to the Delta-Clearwater River during flood events, adversely impacting the Coho salmon fisheries for the Tanana and Yukon River. The existing erosion features also pose substantial safety concerns to the recreating public, which would continue under the No Action alternative.

4.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL EFFECTS

The Delta-Clearwater Flood Control Project is located in the Deltana area of Interior Alaska, approximately 15 miles southeast of the community of Delta Junction, Alaska, within a largely natural area located south of the Alaska Highway near Milepost 1408. The city of Fairbanks is approximately 100 miles to the northwest and Anchorage is about 350 miles to the southwest. The project area is not part of an organized borough, but is in the Southeast Fairbanks census area. The Deltana area is characterized by seasonal extremes of climate ranging from an average low temperature in January of -11°F to an average high temperature in July of 69°F (ADCCED, 2009). Temperature extremes ranging from a low of -69°F to a high of 92°F have been recorded. The average annual precipitation is 12 inches (liquid equivalent), with an average annual snowfall of 37 inches.

The project area is within the Interior Alaska Lowlands Major Land Resource Area (MLRA), which is characterized by broad, nearly level, braided meandering floodplains, stream terraces, and outwash plains (NRCS, 2004). The geology in the project area consists of a deep layer glaciofluvial deposits mantled by a layer of silty micaceous loess originating from the non-vegetated flood plains and outwash plains along the Alaska Range. Soils within the project area are a complex of predominately well drained Gerstle silt loam and poorly drained Tanana mucky silt loam soils with minor occurrences of Salchaket very fine sandy loam and Tanacross peat soils (NRCS, 2009a). The project is within the zone of discontinuous permafrost, and permafrost-driven wetlands are found on Tanana soils within the project area.

The Delta-Clearwater River watershed is approximately 232,000 acres in size. Major subwatersheds include Sawmill Creek (109,400 acres), Granite Creek (32,000 acres), and Rhoads Creek (55,700 acres). All three subwatersheds are ephemeral systems. About 34,900 acres drain directly or through smaller tributaries into the Delta-Clearwater River. After flowing out of the Granite mountain range, Sawmill, Granite, and Rhoads Creek all flow to the north over a gently sloping (2-3 percent slope) outwash plain of the Tanana River (NRCS, 1995). At present, Granite Creek has been pirated by Rhoads Creek between the Granite Mountains and the existing project works, so all normal flows and small flood flows in both of these subwatersheds now flow in the Rhoads Creek channel, located at mile 1408 of the Alaska Highway (NRCS, 2009b).

4.1 Air Quality

According the Environmental Protection Agency (EPA) Region 10 website (EPA 2009a), the project area is not located within an area which is in nonattainment of the National Ambient Air Quality Standards (NAAQS). There are no major sources of either NAAQS criteria pollutants or hazardous air pollutants (HAPs) in the project area. The project site is currently subject to localized, short-term increases in airborne particulate matter less than 10 microns in diameter (PM_{10}) due to wind erosion of fine-grained micaceous silt sediments.

During construction, the Proposed Action would result in minor increases of NAAQS criteria pollutants, primarily PM_{10} as dust from construction equipment as well as carbon monoxide (CO) and airborne particulate matter less than 2.5 microns in diameter ($PM_{2.5}$) due to exhaust from construction vehicles. These emissions are expected to be minor and would not result in an exceedence of the NAAQS. A long-term decrease in localized PM_{10} is expected under the Proposed Action due to an increase in vegetative cover and a corresponding reduction in wind erosion. No secondary impacts on air quality are anticipated as a result of the Proposed Action. Temporary increases in CO, PM_{10}, and $PM_{2.5}$ during construction would be cumulative with similar emissions from nearby agricultural operations and vehicles traveling the Alaska Highway, however the additional inputs are expected to be negligible.

Localized increases in PM_{10} from wind erosion are expected to continue under the No Action alternative. While no secondary impacts are envisioned as a result of the No Action alternative, existing inputs of PM_{10} would continue to contribute to the cumulative ambient levels of PM_{10} in the Deltana airshed.

4.2 Aesthetics

The existing flood control project is an obviously constructed area located within a largely natural area located south of the Alaska Highway. While the project site is not visible from the highway, the aesthetics of the project vicinity are affected by the presence of constructed features, poor revegetation success, and severe erosion inconsistent with the scenic beauty of the overall area. This is discussed briefly in the Delta Clearwater Watershed Project Engineering Report (NRCS, 2002), which recommended that visual impacts be considered as part of future work at the site.

The Proposed Action may result in a minor, short-term decrease in aesthetics to during construction; however restoration of the site would assist in restoring the scenic integrity of the project site in the long term. Due to retaining motorized vehicle access and providing an armored parking area for recreational use, secondary effects on aesthetics resulting from recreational use by motorized vehicles in the largely natural area south of the Alaska Highway may be anticipated. These effects are expected to steadily increase over time as existing trails become degraded and new trails are developed to accommodate the recreational traffic. Due to the presence of numerous alternate access points to the project vicinity, these secondary and cumulative effects are expected to be minimal when compared to the No Action alternative.

The continued degradation of aesthetics at the project site is anticipated under the No Action alternative as erosion and sedimentation are expected to continue. The No Action alternative would likely result in secondary adverse impacts to the aesthetics of the largely natural area south of the Alaska Highway. The existing project area serves as a large uncontrolled campground and access point, which results in heavier recreational use and more intensive secondary effects than are envisioned under the Proposed Action. These increased impacts would also be cumulative with other recreational use impacts to the south side of the Alaska Highway.

4.3 Biotic Communities

4.3.1 Plant Communities

The natural cover in the vicinity of the project generally consist open and closed stands of mixed white spruce (*Picea glauca*), paper birch (*Betula papyrifera*), and quaking aspen (*Populus tremuloides*) forest on well drained soils (NRCS, 1995). According to Viereck et. al. (1992), these forest communities generally have a scattered tall shrub overstory of Bebb willow (*Salix bebbiana*), Scouler willow (*S. scouleriana*), and resin birch (*Betula glandulosa*), with a low shrub layer dominated by Labrador tea (*Ledum groenlandicum*). Bog blueberry (*Vaccinium uliginosum*), lowbush cranberry (*V. vitis-idaea*), and wild rose (*Rosa acicularis*) are also well represented in the shrub layer. The ground layer is dominated by the feathermosses *Pleurozium schreberi* and *Hylocomium splendens*.

Closed stands of black spruce (*Picea mariana*) occur on poorly drained soils in the project area (NRCS, 1995). These communities are dominated by black spruce with patches of green alder (*Alnus crispa*) commonly intermixed (Viereck et. al, 1992). In the understory, common tall shrubs include wild rose, willow (*Salix* spp.), and Labrador tea. Common low shrubs include bog blueberry, lowbush cranberry, and twinflower (*Linnaea borealis*). The moss layer may vary from patchy to continuous and is composed primarily of *Hylocomium splendens* and *Pleurozium schreberi*. *Sphagnum* spp. may be important on many of the wetter sites. The moss mat is generally about 8 inches thick, but may be up to 3 feet thick beneath mounds of sphagnum. Foliose lichens such as *Peltigera aphthosa* and *P. canina* are common. Black spruce regeneration is usually abundant, primarily from layering of lower branches.

Vegetative cover on constructed areas of the previous project consists primarily of an open stands of introduced grasses planted as erosion control during construction and native grasses from natural recruitment. Shrub or tree recruitment is sparse, and large areas of non-vegetated sediments and erosion features exist.

The Proposed Action is designed to reestablish native, seral plant communities on the project site through the import of topsoil and organic materials which contain living plant materials and native seed stock. There would be a short term lack of plant communities on the project site during and immediately following construction. In the long term the Proposed Action would have the effect of replacing the current open grassed area with a community more closely resembling the natural vegetation in the vicinity of the project. No secondary or cumulative impacts on plant communities are anticipated as a result of the Proposed Action.

The existing open grass community would persist under the No Action alternative. Natural recruitment of native plant species would be expected to gradually continue, although this process is expected to take an extensive period of time due to the presence of a poor growth medium. The presence of non-vegetated areas would be expected to remain as erosion and sedimentation processes continue to occur. No secondary or cumulative impacts on plant communities are anticipated as a result of the Proposed Action.

4.3.1.1 Noxious and Invasive Species

The most likely vector for noxious and invasive species onto the restoration project would be in the material obtained from berm piles located on nearby agricultural land. The berms will be screened for removal and use will be selected based on criteria that are currently being developed by NRCS. Berms which are growing species which are listed on the State of Alaska list of noxious weeds (11 AAC 34.020) will be eliminated from consideration.

Due to the screening process, the Proposed Action is not expected to result in an importation of noxious and invasive species in the project vicinity. The application of topsoil and organic material with native seed stock and living plant materials should promote rapid native revegetation and help prevent the invasion of noxious and invasive species via aerial dispersion. Secondary impacts may include secondary invasion in agricultural fields due to exposure of bare soil where berms have been removed. Because the berms are being taken from fields without noxious and invasive weeds, the chance of secondary invasion in agricultural fields is minimized. No cumulative impacts on the presence of noxious and invasive species in the project vicinity.

No direct impacts to the presence of noxious and invasive plant species are envisioned under the No Action alternative. Due to the presence of substantial areas of sparse or non-vegetated areas on the existing site, there is a potential for secondary impacts due to the importation of noxious and invasive species via aerial dispersal. These impacts would be cumulative with the spread of noxious and invasive species in other disturbed areas in the project vicinity.

4.3.2 Fisheries

Rhoads Creek and Granite Creek are ephemeral streams that do not maintain populations of either resident or anadromous fish species. According to the online version of the *Alaska Catalog of Waters Important for the Spawning, Rearing or Migration of Anadromous Fishes* (ADF&G. 2009a), the nearest anadromous fish stream is the Delta-Clearwater River. The Delta-Clearwater River contains spawning habitat for chum salmon (*Oncorhynchus keta*) as well as spawning and rearing habitat for Coho salmon (*Oncorhynchus kisutch*). The river also has a resident population of Arctic grayling (*Thymallus arcticus*).

The Proposed Action would reduce the likelihood for and potential extent of sediment inputs of the Delta-Clearwater River from the Rhoads Creek and Granite Creek subwatersheds back to approximately pre-construction levels. No secondary or cumulative impacts to fisheries habitats are anticipated as a result of the proposed project.

Under the No Action alternative, the current level of heightened risk to fisheries habitat from substantial sediment deposition would continue unabated, and would increase above the present condition as additional erosion and degradation of the facility continues. No secondary impacts are envisioned as a result of the No Action alternative; however the heightened risk would be cumulative with other sediment sources in the Delta-Clearwater watershed.

4.3.2.1 Essential Fish Habitat

The proposed project is not expected to adversely affect Essential Fish Habitat (EFH), as Rhoads Creek and Granite Creek that do no maintain populations of anadromous fish species. In a letter dated July 10, 2009, the National Marine Fisheries Service (NMFS) was consulted regarding this determination.

4.3.3 Wildlife

A wide variety of wildlife species utilize habitats in the vicinity of the existing project (NRCS, 1995). According to the ADF&G comprehensive wildlife conservation strategy (ADF&G, 2006), forested areas in the project vicinity contain habitat for ruffed grouse (*Bonasa umbellus*), belted kingfishers (*Ceryle alcyon*), alder flycatchers (*Empidonax alnorum*), and Hammond's flycatchers (*Empidonax hammondii*). Land birds in the project area include olive-sided flycatchers (*Contopus cooperi*), blackpoll warblers (*Dendroica striata*), boreal owls (*Aegolius funereus*), great gray owls (*Strix nebulosa*), and rusty blackbirds (*Euphagus carolinus*). The region also provides habitat for mink (*Mustela vison*) , marten (*Martes americana*), and moose(*Alces alces*) [ADF&G, 2006] as well as black bear (*Ursus americanus*) and grizzly bear (*Ursus arctos*), coyote (*Canis latrans incolatus*), red fox (*Vulpes vulpes*), lynx (*Lynx canadensis*), plains bison (*Bison bison bison*), wolf (*Canis lupus*), and wolverine (*Gulo gulo*) [NRCS, 1995].

The current infiltration basin is being used as a watering hole for wildlife in the project area both during and for a short period following flow events. NRCS personnel have observed moose and wolf tracks as well as other wildlife sign in and around the basin margins. Although the infiltration basin does not retain water for long periods and has not developed aquatic or riparian characteristics, the basin is used as a resting area for both migratory waterfowl and shorebirds. Passerines nest in the forested areas surrounding the project, and small raptors have been seen hunting in the grassy areas surrounding the existing project.

The Proposed Action would fill and revegetate the infiltration basin as a source of water. This would remove a ponded water source for wildlife in the area as well as eliminating the site's function as a resting area for the migratory waterfowl and shorebirds. Restoring microtopography and capping existing coarse materials with organic-rich topsoil will allow natural ponding to occur, which will offset the water source impacts to some extent. Due to the low overall habitat value of the basin and the availability of alternate sites in the project area, detrimental effects to wildlife are expected to be minimal. The Proposed Action would increase the hunting habitat for small raptors in the short term, and would eventually be restored to a forested habitat suitable for passerines.

The removal of berms from agricultural lands may have minor adverse effects on local wildlife. These berms are frequently nesting and shelter areas for upland game birds such as spruce grouse (*Falcipennis canadensis*), ruffed grouse, and sharp-tailed grouse (*Tympanuchus phasianellus*) as well as numerous passerine species. The berms also serve as wildlife corridors for other species. NRCS is conducting a Wildlife Habitat Evaluation for the proposed project, including berm removal, which will be included in

the final Environmental Assessment. No secondary or cumulative impacts to wildlife habitat are anticipated as a result of the proposed project.

The current use of the project site as a central watering hole and resting area for migratory waterfowl would continue under the No Action alternative. No secondary or cumulative impacts are anticipated under the No Action scenario.

4.3.4 Threatened & Endangered Species

A search of the U.S. Fish and Wildlife Service (USFWS) Threatened and Endangered Species System (TESS) database indicates that there are no Federally-listed Threatened Endangered, Proposed, or Candidate species which occur in the project area (USFWS, 2009). In a letter dated July 10, 2009, the USFWS was asked to verify this information.

State Species of Special Concern which may occur in the project area include the American peregrine falcon (*Falco peregrinus anatum*), olive-sided flycatcher, gray-cheeked thrush (*Catharus minimus*), Townsend's warbler (*Dendroica townsendi*), and blackpoll warbler (ADF&G, 2009b). This restoration project is not anticipated to affect existing habitat for these species at the site of the previous project. Berm removal may adversely affect individuals of these species, therefore it is expected that this activity will be done in accordance with the FWS Advisory: *Recommended Time Periods for Avoiding Vegetation Clearing in Alaska in order to Protect Migratory Birds*. Loss of habitat for these species from berm rows is expected to be substantially offset by the long-term restoration of forest cover at the restoration site.

4.4 Coastal Resources

According to the most recent version of the Alaska Coastal Zone Boundary Maps (ADNR, 2009), the project is not located within the coastal zone. There are no coral reefs in the project area.

4.5 Cultural Resources

Tanana Athabascan Indians occupied the Deltana area throughout most of the 19th and early 20th centuries. The peak of the Alaska gold rush was between 1898 and 1903. In 1899 the Army sent parties to investigate the Susitna, Matanuska, and Copper River valleys to find the best route for a trail north from Valdez, through the Copper River valley. By 1901, the Army had completed the Trans-Alaska Military Road, which extended from Valdez to Eagle City. In 1902, gold was discovered in the Tanana Valley and, shortly after, a spur trail was created from Gulkana on the Valdez-Eagle route to the new mining camp in Fairbanks. This trail became the Valdez-Fairbanks Trail. Ongoing mining activity just north of Delta Junction in the Tenderfoot area, and the Chisana Gold Strike of 1913, brought many prospectors and other travelers through the area. It became known as Buffalo Center in 1927, for the plains bison that were transplanted here in the 1920s. In 1942, construction of the Alaska Highway began, and a military base (later Ft. Greely) was completed 5 miles to the south. In 1946, a dairy farm was established; beef cattle were brought in during 1953 by homesteaders. Construction of the Trans-Alaska Pipeline between 1974 and 1977 brought a dramatic upswing to the population and economy. In 1978, the State began Delta Agricultural Project I, creating 22 farms

averaging 2,700 acres each. In 1982, the Delta II project formed 15 additional farms, averaging more than 1,600 acres each. Tracts of 2,000 to 3,600 acres were sold by lottery, and State loans were made available to purchase and clear the land. The 70,000-acre Delta Bison Range was created in 1980 to confine the bison and keep them out of the barley fields (ADCCED, 2009).

A field archaeological investigation of the project site conducted by NRCS in 1998 (Kawachi, 1999) found no evidence of historic properties or other cultural resources within the project area. Concurrence with a Finding of No Historic Properties Affected for the original construction project was provided by the Alaska State Historic Preservation Officer (SHPO) on August 9, 1999.

The Proposed Action will take place predominately on ground that was extensively disturbed during the construction of the original project. Berm piles which may be used as material sources were also previously disturbed, as they are a remnant feature of land clearing activities. Therefore, NRCS does not anticipate impacts to cultural resources as a result of either the Proposed Action or the No Action alternative. A request for concurrence with a Finding of No Historic Properties Affected under Section 106 of the National Historic Preservation Act was initiated with the Alaska SHPO on August 14, 2009. SHPO concurrence with the finding was issued on September 9, 2009. Consultation with Tribal governments regarding this finding is being done concurrent with review of the Draft EA.

4.6 Prime or Unique Farmlands

There are no designated Prime or Unique farmlands in Alaska. The State of Alaska has not designated Farmlands of Statewide Importance for Alaska. The project is not located within or near designated Farmlands of Local Importance (NRCS, 2009c).

4.7 Floodplains

The proposed restoration project is within the 100-year floodplain of Rhoads Creek and Granite Creek. The original PL83-566 watershed project was an attempt to mitigate downstream flood damage (NRCS, 1995). However, the project as built served to concentrate flows and increase the potential for floodplain impacts beyond the pre-project condition (NRCS, 2009b). The Proposed Action would return the floodplain to approximately pre-construction floodplain patterns, reducing flow concentrations and the potential for downstream impacts beyond the current situation. Concentrated flows and increased risk of erosion and sedimentation within the floodplain would continue under the No Action alternative, resulting in potential secondary, downstream impacts.

4.8 Land Use

The existing flood control project is located within a largely natural area located south of the Alaska Highway. This area is under the management of the Alaska Department of Natural Resources (ADNR) and the U.S. Bureau of Land Management (BLM). The existing project is located on land managed by ADNR (Appendix A, Sheet 2).

Since the construction of the existing project, recreational use of the current site and surrounding area has increased substantially. The improvement of the Mile 1408 road has increased accessibility to the area. The area around the infiltration basin is used extensively as a camping area, especially during hunting season. The numerous old hide and gut piles in the project area indicate that hunting pressure in the area is both high and relatively successful. The dikes and the drill line are used as trails for All-Terrain Vehicle (ATV) traffic, and the cleared area around and including the infiltration basin is used as a 'motocross'-type course for ATVs and off-road motorcycles. According to an article in the Delta Wind newspaper (Novak, 2007), the infiltration basin and surrounding facility is used as the site for an annual Four-Wheeler Fun Run.

The State of Alaska, as the underlying landowner, considers it desirable to retain recreational access to the project area. Therefore the Proposed Action has been designed to provide continued access along Mile 1408 Road; removing the levee but retaining a driving surface for vehicular access. The dikes and drill line would be removed and the area restored, including placing large woody debris both as a deterrent to ATV traffic and to help dissipate overland flow. The current use of the infiltration basin as a parking and camping area would be eliminated by site restoration, however an armored parking area would be retained near the upstream end of Side Inlet 1. The restoration of the existing project would be consistent with the uses on the remainder of the natural areas to the south of the project. Secondary effects may include slight reduction to current levels of recreational use at the project site due to the reduction in parking and camping space, but this is not expected to have a substantial effect on recreational use in the overall area south of the Alaska Highway. The reduction in localized recreational use, should it occur, could also lead to an indirect reduction in local area hunting pressure, a minor increase in the integrity of local wildlife habitat, and a decreased level of noise disturbance and disruption to local wildlife populations.

Under the No Action alternative, current uncontrolled use of the facility as a parking, camping, and recreational ATV course would remain and potentially increase due to the recent economic development in the Delta Junction and Deltana area (see Section 4.9). This increase in level of recreational activity could lead to increased hunting pressure on local wildlife populations, increased degradation and fragmentation of local wildlife habitat, and increased disturbance and disruption to local wildlife due to extensive noise from ATVs, motorcycles, and other off-road vehicles.

4.9 Socioeconomics

Deltana is southeast of Delta Junction on the Alaska Highway, near the convergence of the Richardson and Alaska Highways, approximately 100 miles southeast of Fairbanks (ADCCED, 2009). Deltana is an unincorporated community within no organized borough government. The nearest incorporated community is the City of Delta Junction, a 2nd Class City. The Deltana area is accessible by the Alaska and Richardson Highways, with buses providing public transportation to Fairbanks and Whitehorse. The City of Delta Junction airstrip is located nearby, with five other privately-owned airstrips in the vicinity. Snowmobiles and ATVs are used both for basic transportation and for recreation.

Deltana is a relatively large area, with over 650 homes. Housing in the area predominately consists of single family detached homes. Households have individual wells ranging from 150 to 350 feet deep for potable water, and septic systems for wastewater disposal. Some residents use rain catchment systems. The Delta School has its own well water system. Almost all homes are fully plumbed. Businesses and residences are dispersed over a large area, so a community system is not practical. Refuse is collected by a private firm, Delta Sanitation.

Nearly 40,000 acres are farmed in the Delta area, producing barley, other grains and forage, potatoes, dairy products, cattle and hogs. Recent economic development has been spurred by the Fort Greely missile project and the Pogo Mine, two of the area's largest employers. The Delta/Greely School District and Alyeska Pipeline Services are the major employers, although several state and federal agencies have staff located in Delta, and there are also a number of small businesses which provide a variety of services. Twenty residents hold commercial fishing permits. Buffalo are hunted by lottery only; moose, caribou, bear, sheep and waterfowl are also hunted in this area.

The cost of the Proposed Action is roughly estimated at $8 to $10 million dollars (NRCS, 2009b). In addition, some short-term maintenance will be also be required if the recently restored site is damaged by flow events. The expenditure of these funds could be expected to provide benefits to the local economy through local purchases of fuel, supplies, and other expenses associated with project construction. Non-monetary benefits would include a reduction in the environmental risk to habitats supporting the subsistence, sport, and commercial fisheries originating in the Delta-Clearwater watershed. The Proposed Action may also provide secondary socioeconomic benefits through the employment of local individuals by the construction contractor. These benefits would be cumulative with other construction projects in the area.

No direct socioeconomic benefits would accrue as a result of the No Action alternative. The No Action alternative may result in direct socioeconomic impacts to downstream agricultural operations through increased erosion and sedimentation as well as the continued and increasing environmental risk of sedimentation of fish habitat in the Delta-Clearwater River.

4.9.1 Public Safety

The substantial level of on-site erosion has created serious safety concerns at the project site (see Section 2.2). The eroding areas on the project site create numerous gullies and sheer embankments ranging from 0.5 feet to 10 feet in height. Heavy recreational ATV and off-road motorcycle use of the area occurs, including an annual Four Wheeler Fun Run event well attended by local residents (Novak, 2007). Due to the extent of the erosion features and the intensity of recreational use, the potential for serious injury due to vehicles falling off of the erosional features is substantial.

These safety concerns would be addressed as part of the Proposed Action. The infiltration basin would be filled, training dikes removed, other erosional features filled or

smoothed, and the overall site restored to approximately pre-project topography. While a parking area will be retained for access to the current trail system, this site would be armored to prevent erosion on or near the parking area. No secondary or cumulative impacts to public safety are anticipated as a result of the Proposed Action.

Under the No Action alternative, the existing safety concerns would continue unaddressed and overall risk would increase as erosion and degradation of the project site continues. Under this scenario it would only be a matter of time until serious injury to the recreating public were to occur.

4.9.2 Environmental Justice

Of the estimated 2,233 residents of Deltana, approximately 8 percent are within the minority population with approximately 6 percent of the total area population having Native heritage (ADCCED, 2009). Approximately 15 percent of the population lives below the poverty level. Due to the localized nature of the Proposed Action, disproportionate adverse environmental or human health effects on low-income, minority populations or Alaska Native Tribes are not anticipated. Consultations with nearby Tribal governments are being done concurrent with the review of the draft Environmental Assessment.

4.10 Solid and Hazardous Waste

According to the ADEC Contaminated Sites Database (ADEC, 2009), there are no known contaminated sites located within or adjacent to the project area. A search of the EPA database indicates that there are no National Priorities List sites near the project site (EPA, 2009b). A minor amount of solid waste has accumulated on site due to litter and campfire debris left by recreational users of the existing site. This debris would be removed as part of the Proposed Action, and deposition of solid waste would be expected to decline due to the smaller area available for parking and the lack of camping space. Under the No Action alternative the existing debris would remain in place and would continue to accumulate as the site continues to be heavily used for camping and other recreational activities. No secondary or cumulative impacts are anticipated under either the Proposed Action or the No Action alternative.

4.11 Water Quality

Neither Rhoads Creek nor Granite Creek are on the most recent list of Alaska's impaired water bodies (ADEC, 2008). Water quality monitoring along the Delta Clearwater River has not been done on a consistent basis. Prior to the most recent efforts, the last tests were completed in the early 1990's. At that time there were concerns about pesticides and fertilizers causing potential water quality problems in the watershed. In 2006, the Salcha-Delta SWCD started a water quality monitoring program to track the overall health of Clearwater River. The SWCD monitoring program indicates that water quality in the river is well within the Alaska Water Quality standards, with turbidity being below the standards for drinking water (Cooper, 2007).

Compared to the existing condition, the Proposed Action would result in a long-term reduction of sediment inputs into Rhoads/Granite Creek and a substantial reduction in the potential for sediments to reach the Clearwater Bog or Delta-Clearwater River. The Proposed Action could result in a short-term decrease in water quality of Rhoads or Granite Creeks during project construction. Construction projects of greater than 1 acre require a Section 402 discharge permit, which would be either a National Pollutant Discharge Elimination System (NPDES) permit from the Environmental Protection Agency (EPA) or an Alaska Pollutant Discharge Elimination System (APDES) permit from ADEC. This permit will require the preparation and implementation of a Storm Water Pollution Prevention Plan (SWPPP) for the project, and would serve to minimize the chance of a substantial decrease in water quality. Additionally, the phasing of project construction will substantially reduce the amount sediment from construction that could potentially reach the Clearwater Bog or Delta-Clearwater River during an extreme flow event.

The existing project site has been actively eroding since its completion in 2001, even in low flow events. Each flow event increases the area of exposed soils and leads to accumulating sediments in the infiltration basin. These conditions are expected to continue to occur under the No Action alternative, and are likely to continue to become worse until the existing site naturally stabilizes. The No Action alternative would ultimately result in a heightened risk of substantial sediment delivery to the Delta-Clearwater River during flood events, which would result in a long term increase in turbidity and a corresponding reduction water quality.

4.12 Wetlands and Other Waters of the United States

The Proposed Action would require work within waters of the United States (including wetlands) under the jurisdiction of the U.S. Army Corps of Engineers (USACE). Waters of the United States in the project area include the Rhoads and Granite Creek channels below the ordinary high water line as well as permafrost-driven black spruce wetlands located within the project area (USACE, 1999).

The original watershed project was permitted under USACE permit 4-990120. According to the USACE permit the existing project occurs entirely in uplands, with the exception of the drill line. Drill line restoration would involve the discharge of dredged material into wetlands for purposes of re-establishing natural vegetation in the drill line. As this is a restoration project, conversion of this wetland area to uplands is not anticipated. The Proposed Action would also involve the placement of water bars within the channel of Rhoads Creek, which would also require USACE authorization. NRCS intends to request a modification to the existing USACE permit for the proposed project.

Minimal wetland impacts are anticipated as a result of the Proposed Action. The stabilization and revegetation of the current facility would reduce potential impacts to the Clearwater Bog and the Delta-Clearwater River over the current condition. Minor, temporary impacts to wetlands may occur as a result of the re-placement of native topsoil, organics, and woody debris on the drill line; however these impacts will be offset by the long-term benefit of site restoration and de-channelization of sheet flow along the

drill line, including the reduced likelihood of sedimentation into downstream wetlands or water bodies. The placement of water bars within the Rhoads Creek channel will also disperse flow, which will reduce the likelihood of on-site or off-site wetland impacts.

Under the No Action alternative, the current flood control facility would also continue to pose an increased sediment risk to the Clearwater Bog and the Delta-Clearwater River. The drill line would also continue to be a potential source of sediment to adjacent and downstream wetlands and other waters. No secondary or cumulative impacts to wetlands or other waters of the United States are anticipated as a result of the No Action alternative.

4.13 Wild and Scenic Rivers

There are no designated Wild and Scenic Rivers in the vicinity of the proposed project (NPS, 2009). The nearest designated river is the Delta River starting at approximately ½ mile south of Black Rapids. No impacts to designated Wild and Scenic Rivers are anticipated as a result of either the Proposed Action or the No Action alternative.

5.0 PUBLIC AND AGENCY SCOPING

Following the finalization of the *Delta Clearwater Watershed Project Engineering Report* (NRCS, 2002), the NRCS re-opened the planning process on the entire project in an attempt to address the problems listed above, as well as other problems brought forth by the engineering investigation team. Re-planning efforts were on-going from 2003 through 2008 and involved project sponsors, NRCS, and the general public. Brainstorming was extensive and consideration was given to all ideas. Documentation of these efforts is provided in Appendix C of this document.

5.1 Re-planning

The first re-planning meeting was conducted November 18-20, 2002, with staff from NRCS offices (Anchorage, Fairbanks, and Delta Junction, Alaska and Boise, Idaho); the Cooperative Extension Service - Delta Junction District Office; the Watershed Science Institute; the NRCS National Design, Construction, and Soil Mechanics Center; and members and staff of the Salcha-Delta Soil and Water Conservation District. The specific purpose of the preliminary session was to refocus on problems, opportunities, and a wide range of alternatives for resolving land and water resource issues for the Delta-Clearwater River Watershed area. Two additional meetings were conducted in January and June 2003 with the goal of further developing and evaluating alternatives. Between 2003 and 2007 alternatives were further evaluated by NRCS staff. Following these evaluations, the project sponsors conducted a meeting on December 18, 2007, to review the three build alternatives. These alternatives were then presented at a public meeting in Delta Junction on January 16, 2008. Input from the public meeting was reviewed at a sponsor's meeting on February 27, 2008 in Fairbanks. Public and sponsor input were considered in the development of the NRCS preferred alternative presented in this document.

5.2 Scoping

A scoping letter was sent to federal, state, and local agencies on July 10, 2009. During the comment period, local ADF&G representatives indicated that they had not received a copy of the scoping letter and requested a meeting with NRCS to discuss aspects of the project. This meeting was conducted on September 2, 2009. No other comments were received in response to the agency scoping letter. A follow-up letter providing notes on the scoping meeting and the meeting with ADF&G was sent to the agencies on September 08, 2009.

5.3 Public and Agency Review

A 30-day comment period will be initiated for review of this Draft Environmental Assessment. As part of the review, a public meeting will be conducted on Monday September 28, 2009, and an agency follow-up meeting will be conducted Tuesday, September 29, 2009. Both of these meetings will be in Delta Junction. Comments from these meetings will be addressed and the responses incorporated into the Final Environmental Assessment. The Final EA is expected to be available on or around November 1, 2009.

5.4 List of Persons and Agencies Consulted

The following individuals and agencies have been consulted in the development of this Draft Environmental Assessment:

Person	Individual, Organization or Agency
Bright, Larry	USFWS Environmental Review Branch
Catalone, Irene	ADCCED Division of Community Advocacy
Combes, Marcia	US EPA Alaska Operations Office
Corrigan, Michelle	ADEC Division of Water
DuBois, Steve	ADF&G Wildlife Conservation
Ernst, Torsten	ADEC Contaminated Sites Program
Everett, Christy	USACE Alaska Division, Regulatory Branch
Jacobsen, Shelly	US BLM, Central Yukon Field Office
Kent, Lynn	ADEC Division of Water
Knight, Charles	ADNR Division of Agriculture
Leinberger, Dianna	ADNR Division of Mining, Land and Water
McClean, Robert	ADF&G Habitat Division
Milles, Chris	ADNR Division of Mining, Land and Water
Molitor, Larry	Salcha-Delta SWCD
Parker, Fronty	ADF&G Sport Fisheries
Peltz, Laurence	NMFS Habitat Protection
Proulx, Dan	ADNR Division of Agriculture
Thies, Howard	ADOT&PF Northern Region Maintenance and Operations
Trainor, Michele	Delta Wind (newspaper)
Tvenge, Mike	City of Delta Junction
Wrigley, Bryce	Salcha-Delta SWCD
Wrigley, Rex	Salcha-Delta SWCD

6.0 LIST OF PREPARERS

The individuals involved in the preparation or review of this Environmental Assessment are listed below:

Name	Title and Agency	Role
Phil Naegele	Assistant State Conservationist USDA NRCS	Project Manager
Brett Nelson, P.E.	State Conservation Engineer USDA NRCS	Project Engineer
Rod Everett	Realty Specialist USDA NRCS	NEPA Review
Mitch Michaud	State Forester USDA NRCS	Technical Specialist, Revegetation
Bill Wood	State Biologist USDA NRCS	Technical Specialist, Fisheries and Wildlife
Steven R. Becker, C.E.P.	Tribal Environmental Manager Stevens Village IRA Council	Lead Author and Environmental Analysis

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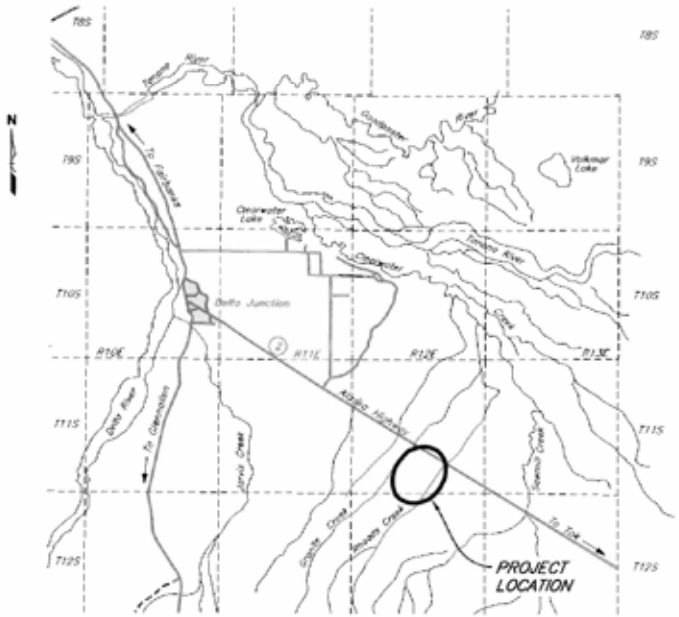
A Figures

The following are conceptual project drawings for the Proposed Action. These sheets are in plan view only. Profile and cross section information are currently under development, and will be included in the Final Environmental Assessment.

LOCATION MAP
NOT TO SCALE



VICINITY MAP
NOT TO SCALE

DELTA CLEARWATER REMEDIATION PROJECT
DELTA JUNCTION, ALASKA

PLANS FOR THE CONSTRUCTION OF A
REMEDIATION PROJECT

PREPARED FOR
SALCHA DELTA SOIL AND WATER CONSERVATION DISTRICT
ALASKA DEPARTMENT OF FISH AND GAME
ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION
ALASKA DEPARTMENT OF NATURAL RESOURCES

BY

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

CONCEPTUAL

INDEX OF DRAWINGS

GENERAL NOTES

1. Horizontal coordinates are in survey feet and are in the Alaska State Coordinate System NAD 83 (Alaska Zone 3). Elevations are in survey feet and datum is NAVD 88 (Geoid 99).
2. All stationing refers to centerline of construction and is the measured horizontal surface.
3. No representation is made as to the existence or non-existence of any utilities, public or private. Absence of any utilities on these drawings is not assurance that no utilities are present. If buried utilities are shown, the location and depth are approximate. The exact location and depth of any utility must be determined by the utility prior to any excavation.

Section Name
Sheet Where Section is Taken
Sheet Where Section is Shown

811 Know what's below. Call before you dig.

Designed B. NELSON 9/2009
Drawn B. DALLAS 9/2009
Checked
Approved

COVER SHEET
DELTA CLEARWATER REMEDIATION PROJECT
DELTA JUNCTION ALASKA

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

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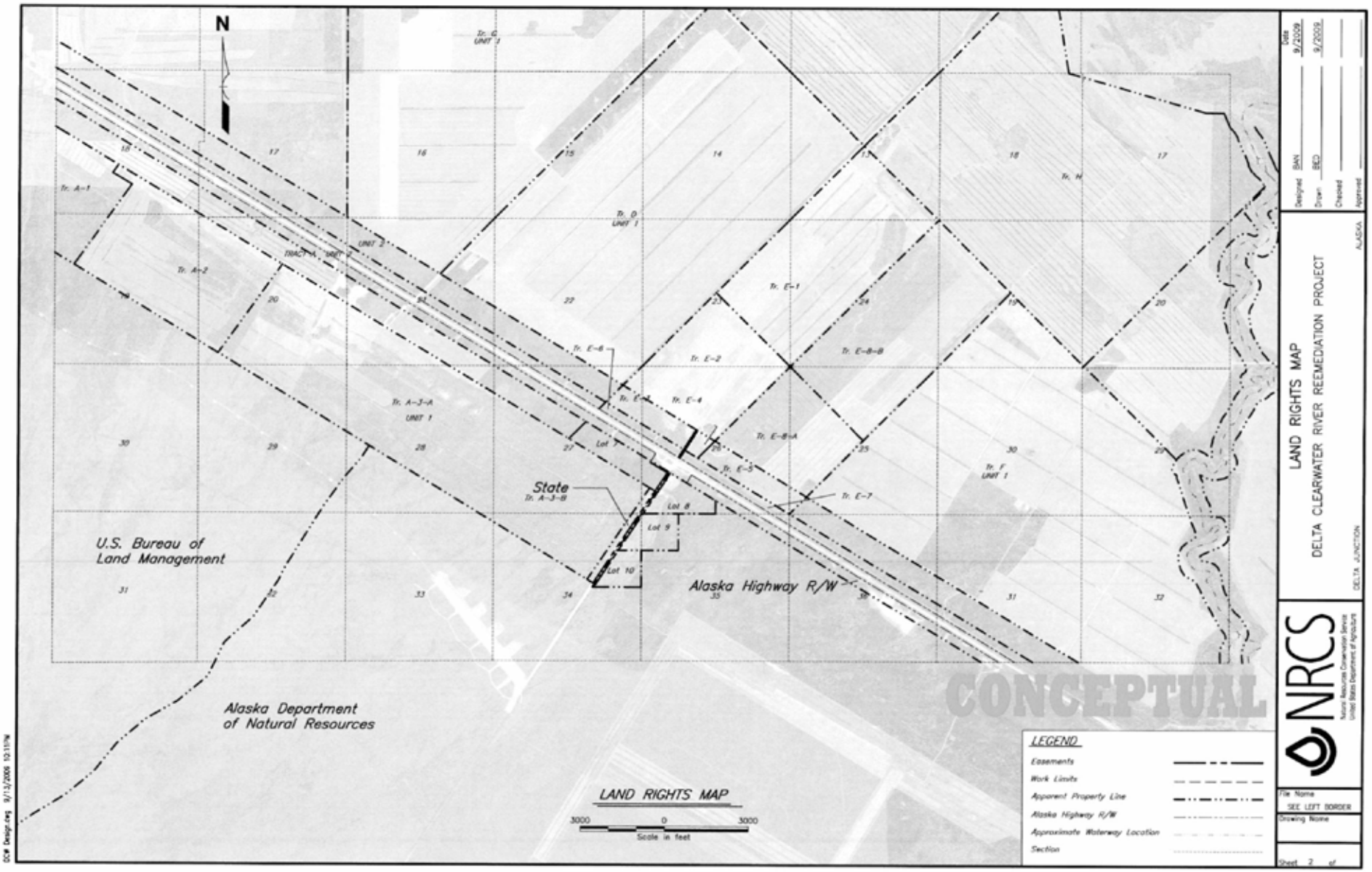
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Alaska Department of Natural Resources
State
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CONCEPTUAL
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Apparent Property Line
Alaska Highway R/W
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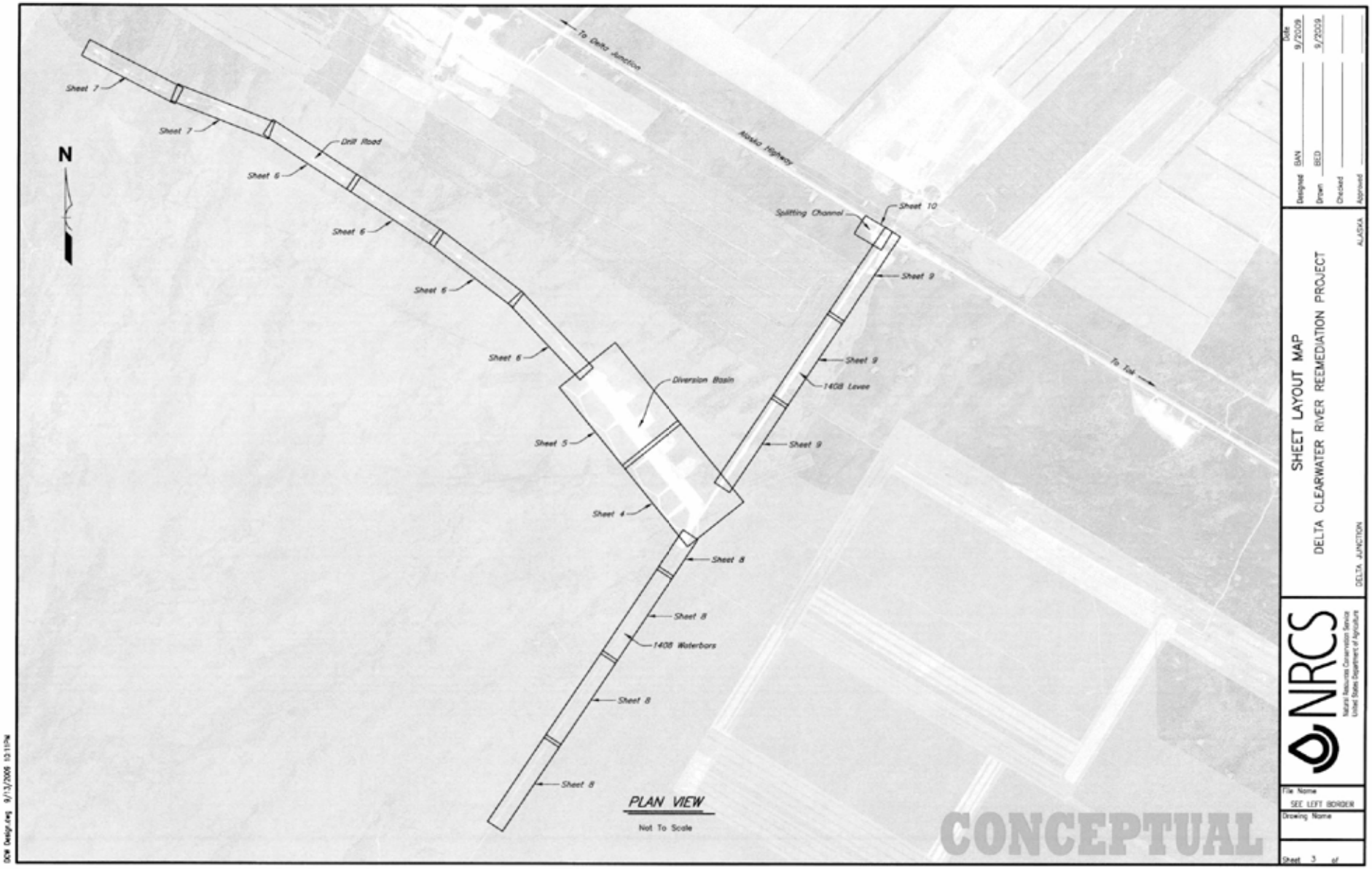
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DELTA JUNCTION
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Natural Resources Conservation Service
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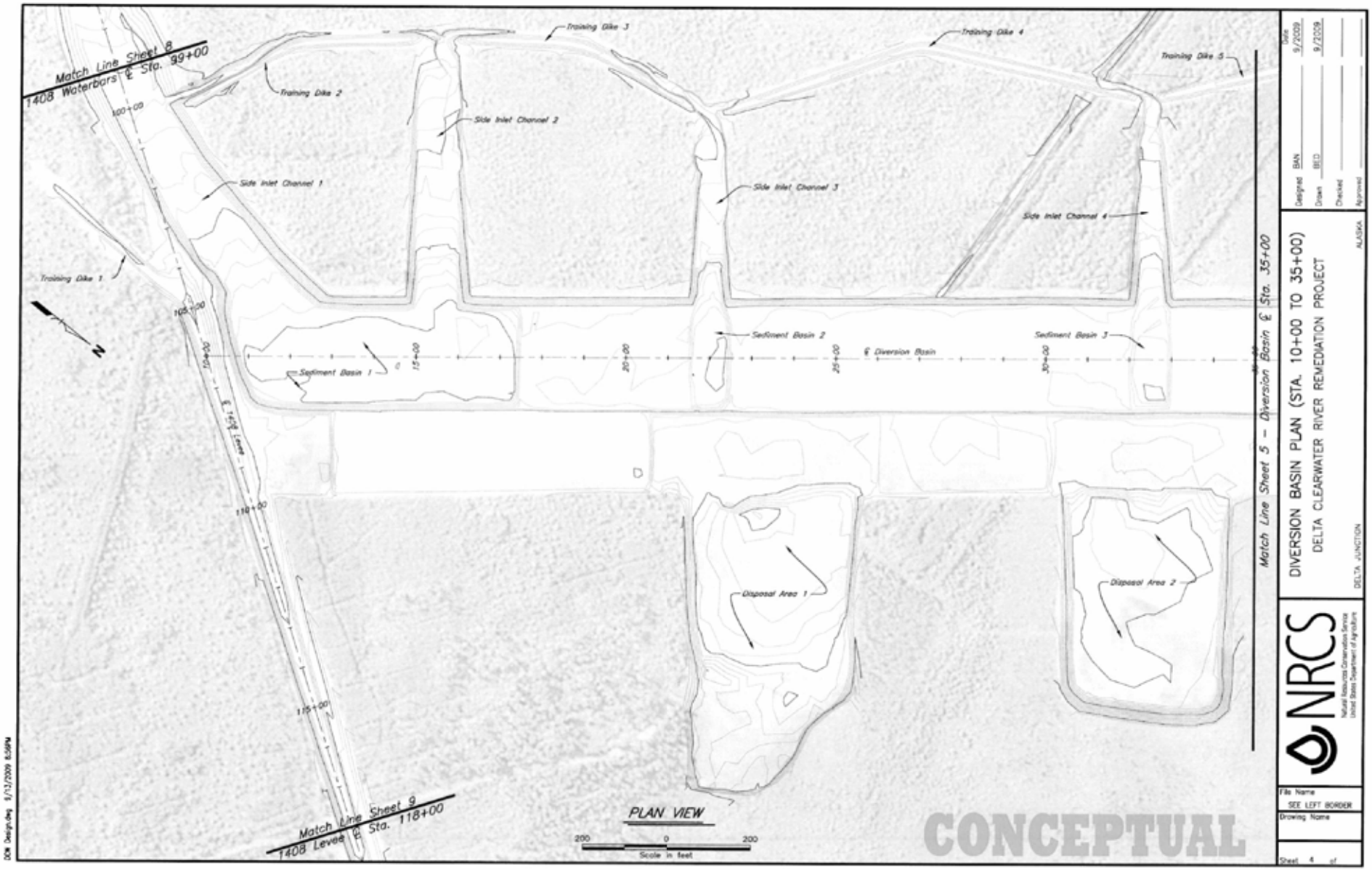
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Sediment Basin 1
Sediment Basin 2
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Disposal Area 2
Match Line Sheet 5 - Diversion Basin @ Sta. 35+00
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Scale in feet
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DIVERSION BASIN PLAN (STA. 10+00 TO 35+00)
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DELTA JUNCTION
ALASKA
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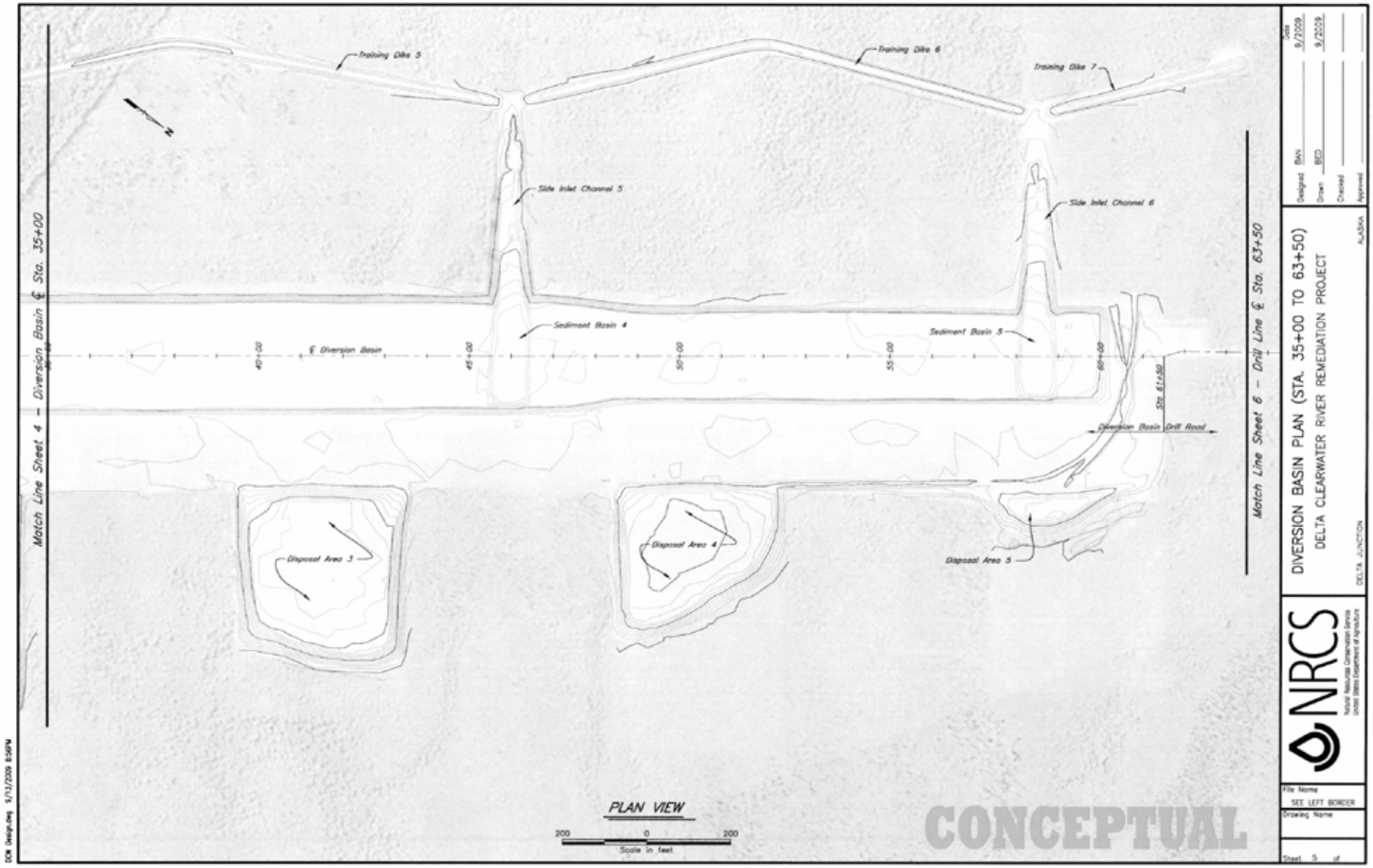
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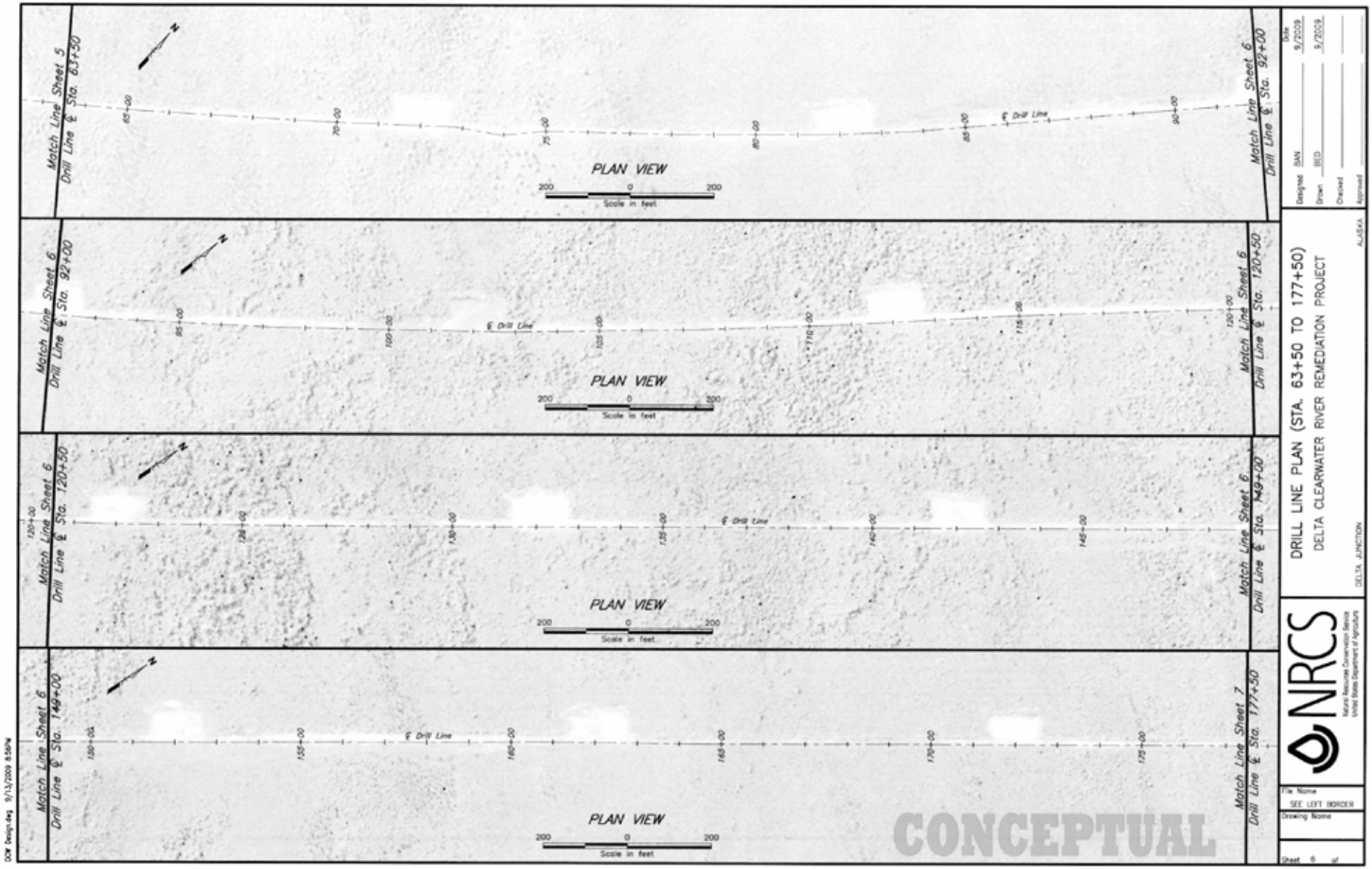
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Drill Line @ Sta. 149+00
Match Line Sheet 7
Drill Line @ Sta. 177+50
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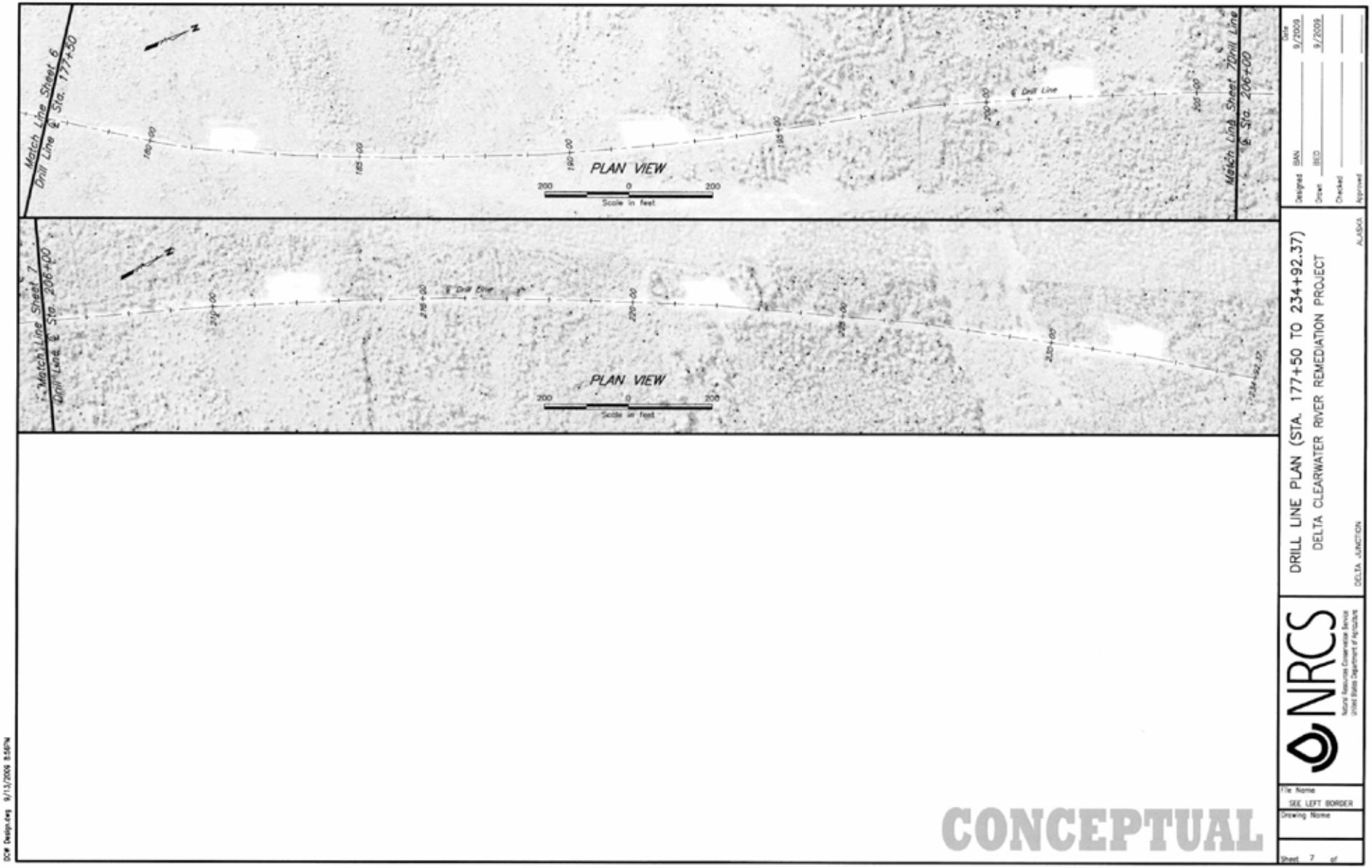
ALASKA
NRCS
CONCEPTUAL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PLAN VIEW
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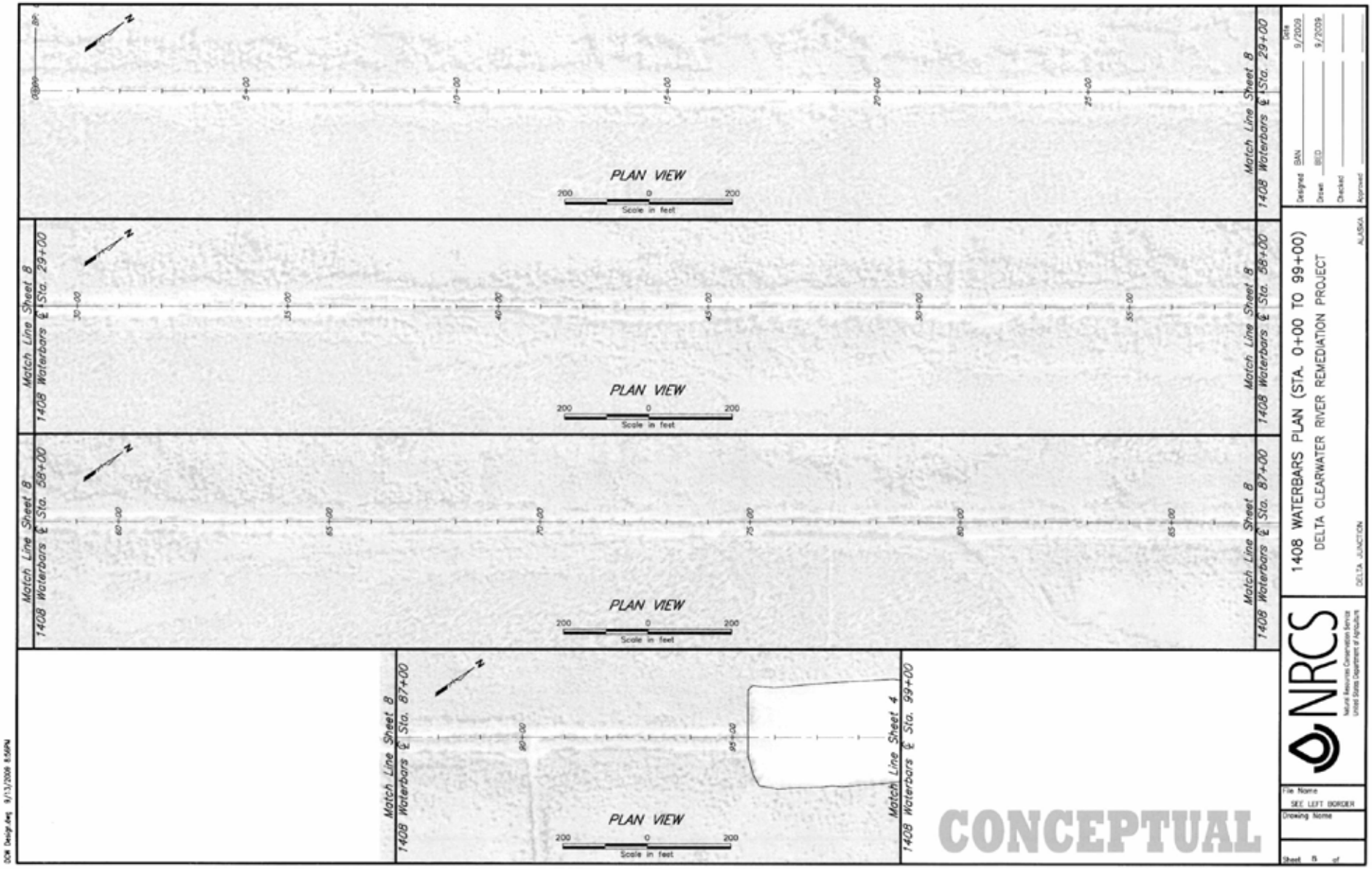
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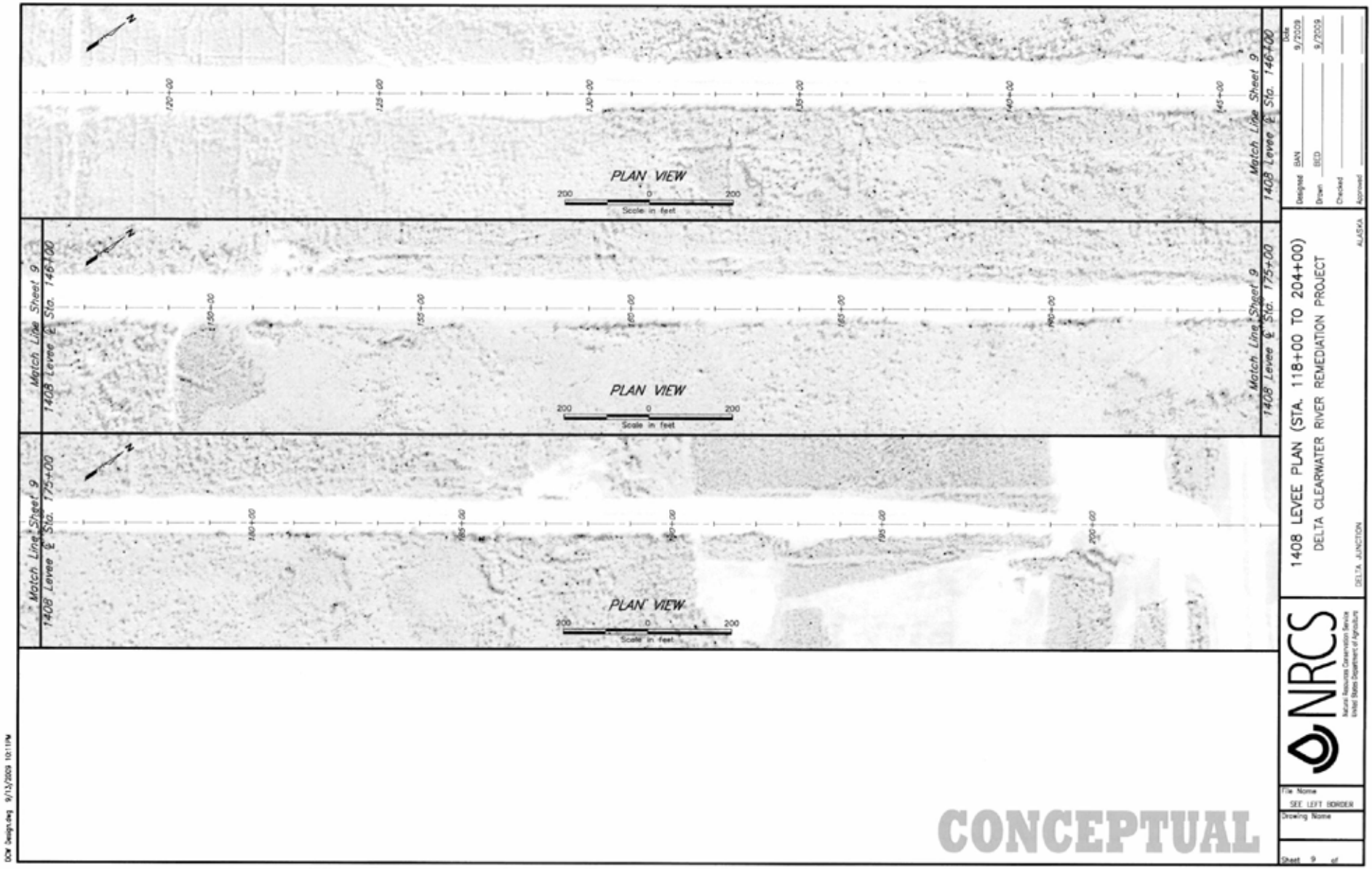
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Scale in feet
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DELTA JUNCTION
ALASKA
NRCS
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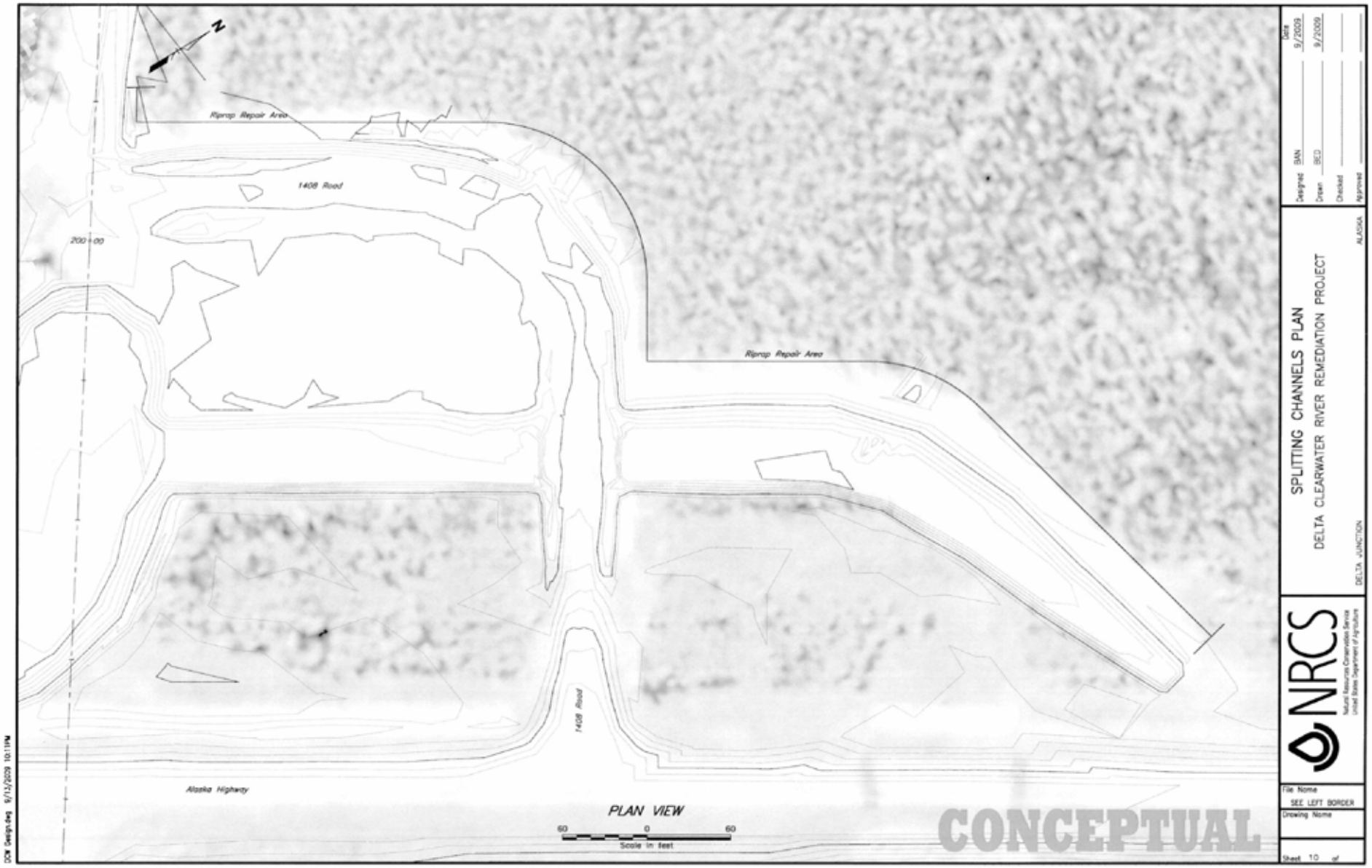
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Riprap Repair Area
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Alaska Highway
PLAN VIEW
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Scale in feet
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SPLITTING CHANNELS PLAN
DELTA CLEARWATER RIVER REMEDIATION PROJECT
DELTA JUNCTION
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B Alternatives Considered But Eliminated

The following is a list of the project concepts considered during project re-planning and the corresponding explanations why each option did not receive further consideration. These alternatives were under consideration only for the Rhoads/Granite Creek subwatersheds, as no measures have been constructed for the Sawmill Creek subwatershed.

B.1 Alternatives Considered in Early Re-Planning

B.1.1 Divert Granite Creek flow to Jarvis Creek

Active debris flows in the upper watershed would create very expensive maintenance of the constructed channel. The approximate length of the constructed channel is one mile with a maximum cut of approximately 100 feet and an average cut of approximately 50 feet. Excavated volume would far exceed 1,000,000 cubic yards to give an idea of scale.

Other concerns include the consequences of transferring water between watersheds, the ability of the Jarvis Creek channel to handle the increased flows, and the huge cost of creating construction access to the site. The hydrology calculations for a 100-year event show that diverting 5,321 cubic feet per second from Granite Creek to Jarvis Creek in the upper watershed still allows 1,100 cubic feet per second to reach the Alaska Highway, which has historically proven erosive.

B.1.2 Embankment structure in upper subwatershed (very near the Granite Mountains)

Flow at the Alaska Highway is estimated at 1,100 cubic feet per second for a 100-year event with this option installed, which doesn't constitute enough of a flow reduction to effectively protect the Delta-Clearwater River from sediment inputs. Active debris flows in the upper watershed would make maintenance of a structure expensive. A final drawback to this option is the expense of construction access to the site. If the construction access is not permanent, then access for ongoing maintenance is problematic. There are also active faults in the upper watershed, complicating and increasing the cost of design and construction.

B.1.3 Embankment structure in lower subwatershed (near Barley Way road)

This potential structure would maximize protection to the Clearwater Bog by minimizing potential area below the structure from which spillage flows could collect sediment. However, building an embankment structure in the lower watershed would result in thousands of agricultural land acres to be at risk of "drowning out" during a flood. This option would also require extensive work at the existing project site to restore the site since the embankment would not limit flows or prevent erosion at the existing project site. By addressing two work sites, the expense would be amplified.

B.1.4 Greenbelts/Forest Restoration

Based on observations by the re-planning team, uncleared areas in Granite, Rhoads, and Sawmill Creek subwatersheds, are still substantially eroding during large storm events. Of further concern is the constant risk of forest fire eliminating woody plants and moss mat. A forest fire would damage the erosion protection provided by reforestation. Furthermore, all agricultural land in the Granite and Rhoads Creek subwatersheds would need to be purchased or put into long term easements and planted or allowed to naturally regenerate back to forest, eliminating a major portion of the local agricultural land base. This large scope would be necessary to ensure the flood flows would actually be within the greenbelt, since the Rhoads and Granite Creek subwatersheds have no defined channel for much of their length and flood flows shift spatially across the alluvial fan. Also of importance is the 25-year estimated time span to establish woody species throughout the area and 75-year time estimate for a heavy moss mat to reestablish.

B.1.5 Embankment at existing project site with permanent pool available for irrigation

This alternative would consist of a high hazard dam. It would also be more expensive than the "long embankment at existing project site" (option #1A below) due to the additional storage needed for a permanent pool. Storing the water creates more problems. For example, even though infiltration cannot be relied on to effectively dissipate flood waters in a timely manner, the pool area of this structure would lose water via infiltration making it an unreliable irrigation source.

B.1.6 Lined channel to convey flood flows to Clearwater Bog

The fatal flaw of this alternative is that the channel would provide a very efficient sediment delivery system directly to the Clearwater Bog/Delta-Clearwater River, exactly what is to be avoided. In addition, this alternative would require a water collection system across the full width of the subwatersheds to feed the water to the lined channel.

B.1.7 Grassed waterway to convey flood flows to Clearwater Bog

This option had similar concerns to option 6 above. Due to extreme erosivity of local soils, this option was deemed not technically feasible. Engineering experts doubted a stable channel cross-section could be developed across the range of flows expected from various storm events. For example, low flows would erode a meandering channel into the larger channel. There were also questions about the difficulty to impossibility of maintaining the sod cover necessary to create a stable grassed waterway.

B.1.8 Sediment basin at Clearwater Bog

Fine sediments require a long time to settle, making this option unrealistic. The sheer volume of flood flows would require a vast basin to provide adequate retention time. This alternative provides no flood protection to agricultural lands, roads, and residences. Working in the Clearwater Bog may have negative consequences to the Delta-Clearwater River, which the project is intended to protect.

B.1.9 Waterspreading

This concept is to prevent flows from becoming concentrated and channelized, minimizing sediment mobilization and sediment transportation, and take advantage of natural infiltration over as much land as possible. Because of the sheer scale of the subwatersheds, the re-planning team doubted the feasibility of installing an adequate amount of water spreading features to effectively disperse the flows, especially in large flood flows. Other major drawbacks of this option include: causing flows to impact the Alaska Highway in areas that Alaska Department of Transportation has not anticipated (culverts are not in place), loss of extensive amounts of agricultural land due to location and number of water spreading structures necessary, and the need to clear substantial additional amounts of land in the watershed to properly install the necessary diversions.

B.1.10 Deep well injection

This alternative is a variation on the original infiltration concept. Major arguments against this option include: the need for a collection system (channel or embankment) across at least 5 miles of the subwatersheds to collect the flood flows, the negative impacts to groundwater from injection of surface waters, and plugging of the injection wells due to sediment that would likely be present in the collected flow volume to be injected.

B.1.11 Short embankment (approximately one mile long) at existing project site

This option would require a much higher embankment height than the long embankment (option #1A below) in order to provide the necessary storage. Even more significantly, flood flows could easily bypass this structure rendering the embankment completely useless.

B.1.12 Increase the area of the existing infiltration channel concept

The re-planning team believes, because of the observed sealing effect of incoming sediments, that over a relatively short period of time the infiltration rate would degrade and no feasible maintenance could restore the necessary infiltration rate. In addition, to achieve the necessary infiltration volumes, the structure would need to be substantially larger than the 200-foot wide by 4 miles long originally planned. This very large increase in size would considerably increase construction costs and also raises questions about clearing and opening additional project area.

B.1.13 Land treatment practices (such as trail stabilization, cover crops, residue management on agricultural fields, etc.)

Due to erosion evidenced in the natural forested areas of the watershed, it is very unlikely simple land treatment practices would have any appreciable erosion reduction benefits during large flood events. These practices may have some minor benefits during low flow events, but ultimately, the large events deliver the sediment to the Delta-Clearwater River and land treatment practices will not effectively address those major flows.

Below are three options currently under consideration for the project. The "long embankment at existing project site" option is the only alternative that addresses the original resource concerns to the necessary degree and is technically feasible, given the established planning objectives shown at the beginning of this report. Because of the expense of the long embankment concept, the re-planning team believes it necessary to include consideration of the restoration and stabilization options in the event that adequate funding could not be obtained for the long embankment concept.

B.2 Alternatives Presented at January 2008 Public Meeting

B.2.1 Long embankment at existing project site

This alternative consists of a high hazard dam because of the embankment location above the Alaska Highway and some local residences. The risk from this structure is assumed to be manageable due to a relatively low dam height of 18 feet and 10 feet of pool depth up to the auxiliary spillway crest. This option is very expensive. It is estimated to cost $51.5 million in February, 2009, based on a conceptual design completed in 2005. This is the only option found by the re-planning team to reliably address all of the original watershed concerns, including substantially reducing sediment inputs to the Delta-Clearwater River, preserving the local agricultural land base, and providing flood protection to area roads, residences, and agricultural lands. This alternative solves the erosion and stability problems with the existing structure by covering, essentially burying, the existing site with the embankment. Access already exists to this site. Maintenance costs are estimated to be reasonable in comparison with other alternatives considered.

B.2.2 Restoration of existing project site

This option would restore the entire project site as closely as practical to pre-project topography and conditions. Field observations during flow events, anecdotal reports from long time residents, and pre-project topography and conditions, all suggest that restoration will minimize adverse affects to the Delta-Clearwater River. The cost of this alternative was roughly estimated at $8 to $10 million dollars. Even with site restoration, some short term maintenance would be required if the recently restored site is damaged by flow events. This alternative was identified as the preferred alternative and moved forward into the NEPA process.

B.2.3 Stabilization of existing project site

This option would stabilize eroding areas of the existing project and obtain flowage easements on private property, as necessary, depending on final flow distribution into and out of the existing project works. The re-planning team had major reservations about the ability to effectively implement this option without resorting to substantial structural practices which would require long term maintenance. Neither the sponsors nor NRCS has any interest in sustaining long term maintenance since the stabilized project site would not be providing any of the benefits laid out in the original watershed plan. The cost of this alternative was roughly estimated at $8 to $10 million dollars.

C Public and Agency Involvement

The following are materials and notes presented as part of the public and agency involvement process for this project. The include both the re-planning and scoping efforts. Information from the public and agency review of the Draft EA will be incorporated in this appendix as part of the Final Environmental Assessment.

United States Department of Agriculture

NRCS

Natural Resources Conservation Service
510 L Street
Anchorage, AK 99501-1964

PDM-Summary of Preliminary Planning Session
Delta-Clearwater River Watershed Project

Date: January 16, 2003

To: Shirley Gammon, State Conservationist
USDA-NRCS, Palmer, Alaska

File Code: 390-13-24

The *Delta Clearwater Watershed Project Engineering Report* was finalized and distributed in February 2002. In the abstract of that report (page 2 of 2, first section), five recommendations for remedial actions and treatments were listed. To address recommendations 1 and 2, a preliminary planning session was conducted November 18-20, 2002 with staff from NRCS offices (Anchorage, Fairbanks, and Delta Junction, Alaska and Boise, Idaho); the Cooperative Extension Service - Delta Junction District Office; the Watershed Science Institute; the National Design, Construction, and Soil Mechanics Center; and members/staff of the Salcha-Delta Soil and Water Conservation District. Staff and members of the Delta Junction NRCS, CD and CES offices were not full-time participants, but provided valuable stage-setting comments and problem-alternatives feedback throughout the 3-day session.

The specific purpose of the preliminary session was to refocus on problems, opportunities, and a wide range of alternatives for resolving land and water resource issues for the Delta-Clearwater River Watershed area. The planning session team used NPPH areawide planning process steps 1 through 5 with initial consideration of step 6 (alternatives evaluation). The following executive summary provides a review of the efforts of the team to date. Additional considerations have been introduced that merit further study during a subsequent session. Once the planning team is satisfied they have adequately addressed all the workable possibilities, the plan needs to be presented to the sponsors and local stakeholders to successfully progress to decision-making and implementation, planning process steps 7 and 8, respectively.

On behalf of the planning session team,

Rob Sampson
State Conservation Engineer

Cc:
Planning Session Team (see page 6)
Lamont Robbins, Co-Director, NDCSMC, Fort Worth

The Natural Resources Conservation Service provides leadership in a partnership effort to help people conserve, maintain, and improve our natural resources and environment.

An Equal Opportunity Provider and Employer

Executive Summary

Preliminary Planning – Delta-Clearwater River Watershed Area
November 18-20, 2002

Planning Session Objective and Goal

Using National Planning Procedures Handbook planning process steps, the session objective was to address recommendations 1 and 2 contained in the Abstract of the *Delta Clearwater Watershed Project Engineering Report, February 2002*. Recommendation #1 was to reinitiate the planning process to determine the best course of action, and #2 was to consider a wide range of alternatives during planning including above-ground storage, grassed waterways/floodways, sediment basins, and erosion control practice on agricultural lands. The conceptual goal formulated by the planning session team was to *"optimize balances between human uses, natural resource processes and wildlife needs to maintain water quality in the Clearwater River."*

Ranked Problems and Opportunities

The team generated and ranked problems and opportunities associated with the Clearwater River Watershed. *Major Issues Included:*

1. Sediment deposition in the Clearwater River
2. Scour erosion from flood events on all lands
3. Loss of water retention and ecological function in areas where the forest/moss mat is disturbed;
4. Degradation of in-stream aquatic habitat
5. Erosion and hydrologic impacts associated with trails and roads used for access and recreation
6. Number and complexity of channels and water management on agricultural lands.

Other issues that were deemed important, but of secondary or tertiary importance were:

1. Decline in the agricultural land base potential, regional identity and economic stability
2. Flood damages/disruptions to the road system (e.g., repair, emergency services, delivery of goods)
3. Ability of existing and potential sponsors to fund requisite operation and maintenance costs
4. Decline in wetland acreage and/or functions
5. Inadequate wildlife habitat on non-agricultural lands

Treatment Options –Lists of Practices by Major Problem or Opportunity

The team then generated lists of candidate conservation practices or measures to consider for solving the identified problems or capitalizing on opportunities.

1. Sediment deposition in the Clearwater River - *settling ponds, buffer strips (filter strip, riparian forest buffer, field border); vegetative barrier; wetland enhancement/creation*
2. Scour erosion from flood events - *flood retarding structure; waterspreading (concentrated flow to sheet flow); divert runoff to other drainage systems; conveyance channels; decommissioning roads/trails; stabilizing roads/trails; use exclusion; critical area treatment; heavy use area protection; mulching; water and sediment control structures; infiltration basin/gallery; deep well injection; grade stabilization structures (rock, log, brush, vegetative barriers); levee-channel system; forest/moss mat protection, residue management; riparian forest buffer; filter strip; conservation cover; clearing and snagging*
3. Loss of water retention and ecological function in areas where forest/moss mat is disturbed - *fire break; use exclusion to travel; road/trail decommissioning, road/trail hardening, mulching, fertilizer/nutrient management; tree/shrub establishment (conifer); deep ripping/tillage; wetland enhancement/creation*

4. Degradation of in-stream aquatic habitat (sediment-related practices addressed in #1 above) - *streambank stabilization; riparian forest buffer; use exclusion (people, vehicles, boats, domestic animals); recreation trails and walkways; wetland enhancement/creation; stream habitat improvement and management; recreation area improvement*
5. Erosion and hydrologic impacts associated with trails and roads used for access and recreation - *roads/trails decommissioning; use exclusion to travel, road/trail hardening; mulching; recreation trails and walkways; heavy use area protection; critical area planting; waterspreading; grade stabilization structures (rock, brush); use exclusion (information, education and signage), tree/shrub establishment*
6. Number and complexity of channels and water management on agricultural lands - *structure for water control; diversion; lined conveyance channel; critical area treatment; water and sediment control structures; infiltration basin/gallery, deep well injection; grade stabilization structures (rock, log, brush, vegetative barriers), levee & channel system; riparian forest buffer; filter strip; conservation cover, clearing and snagging; land smoothing*

Treatment Options – Alternative Scenarios

Alternative formulation as part of the areawide planning process is somewhat complicated due to varying client intentions, the need to have a reasonable degree of technical feasibility and socioeconomic acceptability, and the necessity of "boiling down" complex lists of treatments and practices to successfully communicate proposed actions to clients and stakeholders. The planning team used the term "alternative scenarios" to underscore that further evaluations of these proposals must be done to formulate and refine a true set of client-based alternatives. An underlying assumption for this step of planning is that the objectives of clients and stakeholders are to reduce or eliminate all 6 major problems stated earlier.

Rob Sampson, Carolyn Adams, Lyn Townsend and Terri Stevenson (left to right) helped facilitate the discussion of the planning team to formulate alternative scenarios for the Delta-Clearwater River Watershed Project. Part-time participants not shown included representatives from the Salcha-Delta Soil and Water Conservation District and the Delta Junction Cooperative Extension Office.

Initially, areawide alternatives necessarily take into account all practices and measures deemed to be effective and feasible in solving scoped problems. Unfortunately, all practices and their effects cannot simply be "added up" to determine the most effective solution to the given resource concerns. Root causes of problems in context with ecological (biological, hydrological and geological), economic and social processes must be examined to develop suites of treatments and management that judiciously use funding resources and provide an array of valid choices for decision-making clients. The alternative scenarios listed in the table on the next page represent a preliminary set of proposals that are thought to have merit in addressing major problems in the Delta-Clearwater River Watershed Area. A very basic criteria or evaluation system is demonstrated for each scenario.

Table 1. Alternative Scenarios – Delta-Clearwater River Watershed Project.

No.	Alternative Scenarios	Evaluation Criteria* as compared to Benchmark Conditions								
		Major Problems						Other Concerns		
		Sediment deposition	Scour erosion	Water retention loss	Aquatic habitat degrad	Trailroad erosion	Channel complexity	Ag-land reduction	Risk and uncertainty	Initial cost/O&M cost**
1	*South-of-hwy:* Divert Granite Creek to Jarvis Creek via diversion structure/conveyance channel, road erosion treatments, stabilize existing infiltration structure, and prescribed bison grazing. *North-of-hwy:* Sediment basins, diversions, buffers, wetland creation/enhancement, and road erosion treatment. *Bog-river:* Recreation trails and walkways, use exclusion, streambank stabilization, and riparian forest buffer.	-3	-3	0 to -1	-2	-2	1	+1	+2	+2 to +3/ +2 to +3
2	*South-of-hwy:* Flood retarding structure and conveyance channel, stabilize existing infiltration structure, prescribed bison grazing. *North-of-hwy* Same as #1. *Bog-river:* Same as #1.	3	3	0 to -1	-2	-2	-1	+1	+3	+3/ +2 to +3
3	*South-of-hwy.* Road erosion treatments, waterspreading, wetland creation/enhancement, tree/shrub planting, use exclusion, stabilize existing infiltration structure. *North-of-hwy:* Diversion/conveyance, buffers, sediment basins, wetland creation/enhancement, waterspreading, and road erosion treatment. *Bog-river.* Same as #1 with additional blocks of wetland/forest restoration along perennial rivers/creeks and the bog.	-2 to -3	-2 to -3	-2	-2	-2	-3	+1 to +2	+1	+2/ +1
4	*South-of-hwy:* Reforestation/bioengineering of all channels. *North-of-hwy:* Reforestation/bioeng neering of all intermittent and ephemeral channels. *Bog-river:* Same as #4. (This scenario relies on a partial but significant agriculture-to-forestland conversion)	-3	-2	-3	-3	-1	+1	+3	+1	+1 to +2/ +1

*Expected outcome: +3 – substantial increase, +2 – moderate increase, +1 – some increase
0 – no effect or not applicable, -3 – substantial decrease, -2 – moderate decrease, -1 – some decrease
**Initial Cost does include opportunity costs (e.g., loss of agricultural commodities if actively farmed)

Additional Considerations and Discussion

The planning team also identified other possibilities for project enhancement and opportunities that do not necessarily fit 'neatly' into the structure of Practices and Alternatives Formulation as described in NRCS planning procedures. These are described in the following paragraphs.

a. Multiple use of the existing infiltration basin. The existing basin does little for flood control and will have limited value for sediment control if floodwaters are diverted away from the Rhoads Creek drainage. An opportunity exists to modify the site for use by an established, free roaming bison herd in the area. The basin could function as a wallow or dusting area for the animals and a gathering place for access to water when flow is present. This may also serve the joint purpose of attracting the bison to the south side of the Alaska Highway where they will not inflict serious damage to north side crops. However, if flow is diverted away from Rhoads Creek, or storage is incorporated in the upper watershed, flow events large enough to supply water to the existing structure may be quite rare. Large boulders could be relocated to block the obvious access points to the basin to discourage its use and degradation by off road vehicles. The site could also be revegetated with woody species tolerant to bison and further discourage recreational vehicle use in the basin. The local Joint Task Force for Bison management should be consulted about specifics regarding the feasibility and acceptability of this opportunity.

b. Use of local organic material for mulch to stabilize disturbed areas. Substantial land cover (protective moss mat) was disturbed during engineering investigations of the site and construction of the infiltration basin. Revegetation has been attempted, but short growing seasons and harsh winter climates prevent a quick response. An opportunity exists to redistribute some of the debris removed from the land while clearing some of the Delta-Clearwater agriculture area in the late 1970's and early 1980's. Much of this material is still sitting in long windrows on existing farms. Farmers typically burn these linear piles over time in order to increase productive ag land acreage. The debris piles typically consist of moss mat and large woody debris. This material, if redistributed, could perform valuable ecological functions (land cover to slow down movement of water during rain events, add biomass, and provide microclimates and habitat for a variety of small herbaceous plants, lichen, mammals, reptiles, amphibians and birds). This approach could be effective in the basin itself and along the new trail constructed for soil investigations. Additional benefits could be derived from redistribution of the material by discouraging the increasing use and degradation of the cleared sites by off road vehicles, especially since some piles contain relatively large tree remnants. There could also be the additional effect of compensating the farmers for recycling valuable organic material. Otherwise, the debris is simply 'going up in smoke'.

Planning Session Team

Rob Sampson*, State Conservation Engineer
NRCS, Anchorage, AK

Carolyn Adams*, Director
Watershed Science Institute, NRCS
Raleigh, NC

Ben Doerge*, Geotechnical Engineer
National Design, Construction, and Soil Mechanics Center, NRCS
Fort Worth, TX

Brett Nelson*, Project Engineer
NRCS, Fairbanks, AK

Lori Richter*, State Design Engineer
NRCS, Anchorage, AK

Terril Stevenson*, State Geologist
NRCS, Boise, ID

Lyn Townsend*, Forest Ecologist
Watershed Science Institute, NRCS
Portland, OR

Norm Cosgrove, Member
Salcha-Delta Soil and Water Conservation District, Delta Junction, AK

Rex Wrigley, Chair
Salcha-Delta Soil and Water Conservation District, Delta Junction, AK

Jeff Durham, Program Administrator
Salcha-Delta Soil and Water Conservation District, Delta Junction, AK

Phil Kaspar, Extension Ag Agent
Cooperative Extension Service
Delta Junction, AK

*Full-time preliminary planning session participants

Planning Session #3 Report

Delta-Clearwater River Watershed Project
June 9-13, 2003

Pristine area along the Clearwater River

Objective and Goal

This session was the third in a series to initiate a re-planning effort for the Delta-Clearwater Watershed Area. In the preceding sessions a number of alternative actions were generated to address identified and ranked problems and opportunities (see Attachment #1). Much of the work leading to the selection of alternatives was done without the benefit of in-field observations. The planning group felt it imperative to see and discuss certain characteristics of the watershed to reaffirm the appropriateness and comprehensiveness of the alternatives generated. The conceptual goal formulated early by the planning team was revisited and reconfirmed: *"optimize balances between human uses, natural resource processes and wildlife needs to maintain water quality in the Clearwater River."*

Field Review

During the week's work, field reviews were conducted in three primary ways:

- helicopter flight over the watershed. This included a set-down in the upper watershed of Granite Creek, near an identified avulsion that rerouted overland drainage patterns substantially.
- boat trip on the Clearwater River for firsthand exposure to its unique characteristics such as clarity of water and its productiveness for fish rearing as well as its vulnerabilities from nutrient enrichment and/or sedimentation.
- hiking portions of the major sections of Sawmill Creek and the bog to investigate patterns of debris accumulations, likeliness of sediment transport, prevalence of discontinuous flow paths, characteristics of healthy moss mat, and the overall condition of the riparian areas.

The helicopter flight over the watershed allowed team members an opportunity to grasp the scale of the project. The watershed is very large and includes substantial areas of mountains, wild forestland, ag land, and bog. One of the important items noted during the flyover was the relative scarcity of road and trails in the portion of the watershed south of the Alaska Highway. Well defined channels for both Rhoads and Granite Creek exist for just a short distance out of the mountains. A few miles above the existing project basin, the well defined channels disappear and all surface flow is forced to go overland and in very faint and undefined channel systems. From the lack of channel development, the team surmised that most "normal" flows infiltrate and move downslope as subsurface flow.

A very large avulsion was noted on Granite Creek, and that is where the helicopter set us down for a quick recon of the area. During a large flow event water can simply overtop the "weir" and split into 2 major flow paths. The easterly flow path will take water down towards the existing basin, while the westerly flow path will move water about 2 miles to the west of the existing basin. An active landslide was also observed along Granite Creek in the upper watershed.

The most notable feature of the Sawmill Creek watershed during the overflight was probably the greenbelt along the creek on the north side of the Alaska Highway. Although the greenbelt does exist, several problems and potential problems were immediately evident, including: a clearcut area along the creek to provide grouse habitat, obvious channel avulsions in areas where flood waters flowed across ag land due to inadequate green belt width, and the fact that several hundred acres of what was once part of the bog have been broken out for farm land.

Flood flows well outside the Sawmill Creek greenbelt

The river trip provided the planning team a first hand look at and description of the resource the project is trying to protect. Mr. Frouty Parker, Area Fisheries Biologist for AK Department of Fish and Game, led the tour on the river. Mr. Parker informed us that approximately 100,000 coho salmon enter the Yukon River system annually.

Approximately 30,000 are caught by subsistence fishermen in the villages along the Yukon, which leaves 70,000 fish in the river to spawn. About 30,000 of those fish spawn in the Clearwater River which makes it easily the largest coho producing stream in the entire Yukon River drainage. The Clearwater River is not large and at times the river has been so full of salmon that they are forced to spawn in very shallow side channels in the bog itself because all of the better spawning grounds have been used by other fish. That is why preventing sediment from entering the Clearwater River is thought to be so important to Fish and Game. The main channel of the river has enough velocity to flush itself of the very fine sediment, but the still water in the side channels and tributaries is being smothered by silt deposition and these other habitats are necessary to maintain some semblance of a coho salmon run on the Yukon River.

Fry congregating in shallow backwaters of the Clearwater River

The river is also a top notch trophy grayling fishery. During our river tour we saw multitudes of fry (of several species) in the still waters of the side channels along the river. Those observations coupled with Mr. Parker's description of the productivity of the river pretty much convinced the team that the Clearwater River is indeed a critical natural resource deserving of protection. The streambanks appeared quite stable and little or no boat wake erosion was visible.

One of the primary purposes in hiking some of the lower portions of the Rhoads/Granite Creek watershed was to show team members the gully erosion caused by past floods. Many of these gullies are quite large and were easily visible from the air. One important fact the team discussed when viewing these gullies was the fact that they were created in the late eighties when some of the ground was already well grown up into a dense stand of saplings. That said, one concern of the team is whether grass or forest buffers will actually curb existing erosion problems. It is obvious that undisturbed forest cover with an intact moss mat is very resistant to erosion, but until the moss mat has regenerated the ground is bare and highly susceptible to erosion. No one seems to have a good handle on the amount of time it takes for a moss mat to regenerate following clearing operations or an intense fire, but estimates range from 25 to 100 years.

The team did a couple of shallow excavations in the bog trying to determine the extent and location of some sediment deposits from the last flood event. Results were inconclusive, and no sediment deposits were readily apparent even though huge gullies that had to have resulted in several hundred cubic yards of sediment being delivered to the bog were witnessed. The area of the bog the team walked was along the 1408 trail. At that point there appears to be a mile or more of undisturbed bog between the erosion on the ag/CRP lands and the surface waters expressed as the headwaters of the Clearwater River. This fact brought more questions than answers. If a mile of natural buffer is insufficient to remove sediment from the floodwaters, what can we possibly construct at the entrance to the bog (such as sediment basins, filter strips, and buffers) that will effectively prevent sediment from reaching the Clearwater River system? Does the bog assimilate the larger, coarser sediments and pass the fine sediments through the Clearwater River? How great is the bog's capacity to assimilate sediment without damage to itself? Does the bog need influxes of sediment in order to maintain its natural functions?

Sediment laden runoff in the Clearwater River

These reviews provided additional understanding that proved useful when revisiting the generated alternatives. The team noted, however, that there are still questions about how some of the physical processes work within the watershed. For example, only a meager amount of knowledge is available about watershed sediment sources and delivery in general, and in specific, how sediment may or may not move through the bog. These issues will be especially relevant in environmental assessment to determine whether stopping or sharply curtailing the amount of sediment that reaches the bog will harm it. Additionally, the hydrologic processes of the bog are not well understood, so it is not known whether decreased and/or concentrated surface runoff to the bog will affect its functions or whether the bog is 'typically' driven by ground water

Eagle foraging along a stretch of the Clearwater River

Treatment Options – Alternative Scenarios

In spite of certain data gaps and discomfort with limited knowledge in some areas, the team felt that the modified alternatives were sufficiently robust to advance to the next level of detailed planning and evaluation.

All previously generated alternatives were reviewed in light of observations and discussions in the field review. Some alternatives remained the same, some were modified, some were abandoned, and at least two new alternatives were developed. In all, eight alternatives remained, consisting of five for the Rhoads-Granite Creek system and three for the Sawmill Creek area. The benchmark condition was also documented so comparisons of conditions and effects could be made. The following chart describes the alternatives. Each alternative is accompanied by a figure in Attachment #3. The figures in Attachment #3 show an aerial photo of much of the basin and are overlain by conceptualized sketches of the alternative's feature(s). The figures also list summaries of the pros, cons, and the required operation/maintenance activities for each alternative.

Alternative	Description
Rhoads-Granite WS	
RG-1 Long Dam	Objective: To minimize substantially the risk of uncontrolled flow from all drainages in the Rhoads-Granite watershed. This alternative consists of a dam (floodwater retarding structure) to catch, store, and release floodwaters from the Rhoads-Granite drainage system. The dam would be located south of the Alaska highway, approximately 20,000 feet in length and encompass the existing infiltration structure plus an additional 3 miles to the west. Captured floodwaters would be released via a grass-lined excavated conveyance into a low, shallow sediment basin prior to release into the existing Clearwater River Bog area. The conveyance channel would include perimeter filter strips.
RG-2 Short Dam	Objective: To reduce the detrimental effects of uncontrolled flow in the western portion of the Rhoads-Granite watershed, and to substantially minimize flooding risks in the eastern portion of the watershed that has flooded more frequently in the past several decades. This alternative consists of a 'short' dam to catch, store, and release floodwaters from the eastern portion of the Rhoads-Granite drainage system. The dam would be located south of the Alaska highway, approximately 5,000 feet in length, and encompass the existing infiltration structure. Captured floodwaters would be released via a grass-lined excavated conveyance into a low, shallow sediment basin prior to their release into the existing Clearwater River Bog area.

RG-2 Short Dam (con't)	The western portion of the watershed would direct floodwaters through a strategically located series of grass-lined conveyances, and to release the flow into low, shallow sediment basins for water quality unprovements prior to release into the existing bog. There is no proposal to catch, store, and release floodwaters higher in the watershed to reduce velocities or volumes. All conveyance channels proposed in this alternative would include perimeter filter strips.
RG-3 Barley Way Dam	Objective: To reduce the detrimental effects of uncontrolled flow in the western portion of the Rhoads-Granite watershed, and to substantially minimize flooding risks in the eastern portion of the watershed that has flooded more frequently in the past several decades. A dam in this location will eliminate the safety issues of a dam above the Alaska Highway. The keystone feature of this alternative is a dam along Barley Way to catch, store, and release floodwaters from the eastern portion of the Rhoads-Granite drainage system. The dam would be located north of the Alaska Highway near Barley Way and connect via an outlet channel (south of the Alaska Hwy.) and extensive greenbelt (north of the Alaska Hwy.) to the existing infiltration structure. Captured floodwaters would be released via a grass-lined excavated conveyance into a low, shallow, sediment basin prior to their release into the existing Clearwater River Bog area. In this alternative, the western portion of the watershed would be treated identical to the "Short Dam" proposal. Floodwaters would be directed through a strategically located series of grass-lined conveyances, and released into low, shallow, sediment basins for water quality improvements prior to release into the existing bog. There is no proposal to catch, store, and release floodwaters higher in the watershed to reduce velocities or volumes. All conveyance channels proposed in this alternative would include perimeter filter strips.
RG-4 Non-Dam	Objective: To reduce the detrimental effects of uncontrolled flow in the western and eastern portions of the Rhoads-Granite watershed In this alternative the flow exiting the culverts at the Alaska Highway would be directed via grass-lined excavated conveyances into low, shallow, sediment basins prior to their release into the existing Clearwater River Bog. All

RG-4 Non-Dam (con't)	conveyance channels proposed in this alternative would include perimeter filter strips. There is no effort to contain large flow events, rather those infrequent occurrences would simply be allowed to flow overland.
RG-5 Stabilize Existing Structure	Objective: To stabilize the existing infiltration basin This alternative does not contain or manage flow from flood events, rather floodwaters would simply be allowed to flow as they do at present. The sole purpose of this alternative is to stabilize the existing project works to prevent additional sediment from being picked up by flood waters flowing through the existing project area.
Sawmill WS	
S-1 Non-Structural	Objective: To reduce the detrimental effects of uncontrolled flow in the Sawmill Creek WS In this alternative the greenbelt along Sawmill Creek would be widened in key areas north of the Alaska Highway, and a permanent greenbelt would be established along the creek on the south side of the Alaska Highway. The creek would be allowed to flow naturally and floodwaters would be contained within the greenbelts. Flow would be directed through the greenbelts into a constructed wetland complex prior to release into the existing Clearwater River Bog.
S-2 Lower Dam	Objective: To minimize substantially the risk of uncontrolled flow from the Sawmill Creek watershed. This alternative consists of a dam to catch, store, and release floodwaters from the Sawmill Creek drainage system. The dam would be located north of the Alaska Highway somewhere near Barley Way, and would span the existing greenbelt. Captured floodwaters would be released via the enlarged remaining greenbelt into the existing Clearwater River Bog. This alternative also situates new greenbelts to increase the width and extent of existing greenbelts and to establish greenbelts where none now exist (primarily on the south side of the Alaska Highway).
S-3 Upper Dams	Objective: To minimize substantially the risk of uncontrolled flow from the Sawmill Creek watershed. This alternative consists of constructing two small upstream dams to catch, store, and release floodwaters from the Sawmill Creek drainage system. The dams would be located south of

S-3 Upper Dams (con't)	the Alaska Highway. The primary advantage of locating the dams south of the Alaska Highway is to prevent loss of large tracts of ag land to dam construction. Captured floodwaters would be released via the enlarged remaining greenbelt into the existing Clearwater River Bog. This alternative also situates new greenbelts to increase the width and extent of existing greenbelts and to establish greenbelts where none now exist (primarily on the south side of the Alaska Highway).

A couple of additional alternatives were discussed at the close of the session. These included: the use of "farmer friendly greenbelts" in lieu of grassed waterways, a series of very low dams instead of a single larger structure, and a series of low berms and/or tree and brush rows to spread flood flows over very large acreages rather than allow the flow to concentrate. These concepts or portions of these concepts should be kept in mind as the project moves forward into more detailed alternative analysis.

Alternatives that the team chose to remove from further consideration include: infiltration gallery to dissipate floodwaters, using deep well "injection" to increase infiltration, diverting Granite Creek into Jarvis Creek, and dams in the upper watersheds of Granite and/or Rhoads Creeks. The infiltration gallery is the same concept used for the original design of the Delta-Clearwater project. Even though the existing design failed to work as planned, we did consider increasing the area for infiltration, increasing infiltration by deep ripping of the constructed channel bottom, and deepening of the existing structure to reach cleaner gravel materials, all as a means of increasing infiltration capacity and allowing the original design to function adequately. In the end the concept was abandoned due to excessive costs and significant doubts as to whether such measures would actually work in the long term.

Increasing infiltration capacity by means of deep well injection was also discussed. This option was dismissed with very little consideration due to the unknown consequences such a project might have. Detrimental consequences could include unacceptably high O&M costs, contamination of local wells and groundwater sources, and possible creation of springs and seeps at undesirable locations.

Diverting Granite Creek into Jarvis Creek at a point soon after Granite Creek leaves the mountains was another concept we looked at early on in the process. Jarvis Creek is a glacially fed stream that carries a very large sediment load anyhow, so the potential addition of more sediment may not be particularly detrimental. The downsides were the extreme cost of the conveyance channel, likelihood for very high O&M, and the fact that even total diversion of Granite Creek at the mountains does not completely eliminate floodwaters on the ag lands and into the Bog. The final nail in the coffin for this alternative was the fact that Jarvis Creek already experiences relatively frequent flood events that cause damage in and around the community of Delta Junction. To add more water to this creek would violate the "do no harm" principle and so it was considered nonviable.

Dams in the upper watersheds of Rhoads and/or Granite Creek also seemed plausible in the early stages of planning. A dam that is way upstream of the Alaska Highway, and located in inaccessible wild country would alleviate two of the negative aspects of other dam projects. First of all, a dam breach analysis would likely show the Alaska Highway to be safe in the unlikely event of structure failure since the dam is so far upstream of the highway. Secondly, since the dam would be located in a completely unpopulated and wild area that cannot be accessed by any means other than hiking or helicopter, the aesthetics of a large dam would not be as important a consideration as it would be in a more visible locale. The fundamental problems with the upper watershed dams lay in the inability to access the site for construction without damaging large amounts of pristine ground for access purposes. This remoteness would also result in extreme construction costs for the project; and again, upper watershed detention or diversion has been shown to not satisfactorily reduce flood flows below the Alaska Highway and therefore this option would not meet the project objectives.

Summary

The planning team generally felt satisfied with the alternatives generated from the planning process, but believe more detailed investigations are merited on the several that will move forward after the appropriate reviews have occurred. The team recognizes that there are still unanswered questions about the physical processes at work within the watershed. In particular, sediment sources and delivery are areas where the team felt that additional insight is critically important.

There were other areas that also generated questions about how the watershed performs:

Exactly how does sediment move or not move through the bog?

Will the bog be harmed by stopping or sharply curtailing the amount of sediment that reaches it?

Will decreased and/or concentrated surface runoff to the bog affect its functions, or is the bog hydrology driven almost entirely by ground water similar to the river itself?

Is there opportunity to obtain more information and descriptions of Alaska State Forestry's harvest plans for the watersheds?

Are resources available to obtain survey information of Sawmill Creek and the two Granite Creek channels west of 1408 Road? Is this information worth the cost of collection?

Are there lab controlled tests that could be set up to determine the ability of grassed waterways and greenbelts to improve the problems in the watershed given climate, soil, and vegetation growth limitations in Alaska?

Recommendations

Based on the work and analyses performed by the team, the site visits and the discussions/debates, the team recommended that the next phase of the replanning project focus on the following alternatives:

RG-2 (Short Dam) received 7 votes
RG-3 (Barley Way Dam) received 5 votes

S-1 (Non-Structural) received 7 votes
S-2 (Lower Dam) received 5 votes

Other alternatives also received votes and merit due consideration. However, the general consensus of the planning team was to begin detailed analyses on the above mentioned alternatives.

Planning Session Team

Rob Sampson, State Conservation Engineer
NRCS, Anchorage, AK

Carolyn Adams, Director
Watershed Science Institute, NRCS
Raleigh, NC

Ben Doerge, Geotechnical Engineer
National Design, Construction, and
Soil Mechanics Center, NRCS
Ft. Worth, TX

Brett Nelson, Project Engineer
NRCS, Fairbanks, AK

Lori Richter, State Design Engineer
NRCS, Anchorage, AK

Lyn Townsend, Forest Ecologist
Watershed Science Institute, NRCS
Portland, OR

Terril Stevenson, Geologist
State Office, NRCS
Boise, ID

Joe Gasperi, Geologist
NRCS, RDT, Spokane, WA

Lucas Henry, Engineering SCEP
NRCS, Fairbanks, AK

Attachment #1

Ranked Problems and Opportunities

The team generated and ranked problems and opportunities associated with the Clearwater River Watershed. *Major issues included:*

1. Sediment deposition in the Clearwater River
2. Scour erosion from flood events on all lands
3. Loss of water retention and ecological function in areas where the forest/moss mat is disturbed; Degradation of in-stream aquatic habitat
4. Erosion and hydrologic impacts associated with trails and roads used for access and recreation
5. Number and complexity of channels and water management on agricultural lands.

Other issues that were deemed important were:

1. Decline in the agricultural land base potential, regional identity and economic stability
2. Flood damages/disruptions to the road system (e.g., repair, emergency services, delivery of goods
3. Ability of existing and potential sponsors to fund requisite operation and maintenance costs
4. Decline in wetland acreage and/or functions
5. Inadequate wildlife habitat on non-agricultural lands

Attachment #2

Effects Matrix for Surviving Alternatives

	Sediment deposition in the Clearwater River	Scour erosion on all lands	Moss mat disturbance	Aquatic habitat degradation	Trail/Road erosion	Channel complexity/water management	Reduction in ag land base	Flood damages	O&M cost	Decline in wetland acreage or functions	Wildlife habitat	Existing basin
RG-1	-3	-3	+1	-2	-2	-3	-3	-3	+2	-1	-2	-3
RG-2	-2	-2	0	-1	-1	-3	-2	-3	+1	-1	-3	-3
RG-3	-3	-3	0	-3	-3	-2	+2	0	+2	0	0	-3
RG-4	-1	-1	-1	-1	-1	0	+2	0	+1	-1	0	-3
RG-5	-1/2	0	0	0	0	0	0	0	+1	0	0	-3
RG-6	0	0	0	0	0	0	0	0	0	0	0	0
S-1	-1	-2	-1	-2	-1	0	+2	0	+1	-1	0	N/A
S-2	-3	-1	-1	-2	-1	-2	+1	0	+2	-1	0	N/A
S-3	-2	-2	+3	-3	-1	-3	+1/2	-2	+3	-2	-3	N/A

In the matrix above, a + indicates an increase, and a - indicates a decrease. 1 = slight, 2 = moderate, and 3 = substantial. Please note that the effects matrix is a dynamic document based on the subjective analysis of the team. Obviously some of the effects can be changed, by making minor changes in the plan of work for each alternative, while other effects are more difficult to manipulate.

United States Department of Agriculture

NRCS

Natural Resources Conservation Service
800 W Evergreen Ave, Suite 100
Palmer, AK 99645

SUBJECT: Delta Clearwater River Watershed Project Sponsor Meeting On Project Closure

Date: November 20, 2007 File code: 3910-11

To: Rex Wrigley, Chair, Salcha Delta Soil and Water Conservation District
Larry Hartig, Commissioner, State of Alaska Department of Environmental Conservation
Tom Irwin, Commissioner, State of Alaska Department of Natural Resources
Denby S. Lloyd, Commissioner, State of Alaska Department of Fish and Game

As sponsors of the Delta-Clearwater River Watershed Project, we are faced with some challenging decisions about how to conclude this project. To begin our discussions, I propose a project closure meeting December 18 in Fairbanks. The meeting will be held at the Westmark Hotel, 813 Noble Street, from 9 a.m. to noon.

In 1995, the USDA Natural Resources Conservation Service (NRCS) prepared a Watershed Plan and Environmental Assessment for the Delta-Clearwater River Watershed Project. The sponsors of the project were the Salcha-Big Delta Soil and Water Conservation District and the Alaska Departments of Fish and Game, Environmental Conservation and Natural Resources.

The purposes of the Delta-Clearwater River Watershed Project were to reduce flooding and erosion threats on the Clearwater River system, to protect important fishery habitat from sediment deposition, and to reduce flood damage to cropland, the Alaska Highway, local roads and general recreation areas.

Construction on the project commenced in 1998 and components were partially completed. Project construction halted due to soil limitations encountered on the site. The selected alternative, a large infiltration basin, was based on a water infiltration rate of 285 cubic feet per square foot per day. A 1998 Supplement to the Watershed Plan was signed by the sponsors when additional testing reduced the infiltration rate estimate to 40 cubic feet per square foot per day. Construction on the project halted in 2003 when an NRCS engineering investigation concluded that the infiltration rate might even be much lower.

In September 2007, a multi-state NRCS planning and design team prepared a list of options for Delta-Clearwater River Watershed Project. Based on their report and cost estimates, I made the determination that we had no realistic options with existing funding to complete the project as designed.

NRCS requests your input in determining the best solution of several options to conclude this project. I expect this will be the first of several meetings required to determine a course of action for vacating this project.

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It is vitally important that a decision-maker is present at these meetings to represent your agency. If you or your representative with delegated authority cannot meet at the proposed times, please contact my Executive Assistant Dee Covalt who will attempt to find a meeting time that meets the needs of all the project sponsors. She can be reached at 907-761-7747 or by email at philma.covalt@ak.usda.gov.

Enclosed is a copy of the original Watershed Plan and the 1998 Supplement.

I look forward to meeting with you for further discussions about concluding the Delta-Clearwater River Watershed Project.

Sincerely,

Robert N. Jones
State Conservationist

Encl: Delta-Clearwater River Watershed Plan and Environmental Assessment, June 1995
Supplemental Watershed Agreement No. 1 and Supplemental Watershed Plan No. 1, October 1998

Popular Recreation Area At Risk Of Being Lost

By Cari Novak

(Published in the *Delta Wind*, November 29, 2007)

Mile marker 1408 on the Alaska Highway may not stand out as being particularly important to most people. But to many locals, 1408 is more than just one more marker along the 1422-mile long road; it's a favorite spot for riding all-terrain vehicles, berry picking, hunting, camping, and other family activities. And to at least one individual, it was home for a time. All this may be in jeopardy.

The area is also well known for flooding. General consensus claims the flooding is the result of the Delta-Clearwater River Watershed Project that, ironically, was created to alleviate flooding.

Began as a request for assistance from the Salcha-Delta Soil and Water Conservation District and other concerned agencies and individuals, the Delta-Clearwater River Watershed Project was to help protect the watershed. Based on the request for assistance, the US Department of Agriculture Natural Resources Conservation Service (NRCS) agreed to help. Planning work began on the project in the 1980s and the original Delta Clearwater River Watershed Plan was completed in June 1995. The watershed is approximately 232,000 acres in size and is located 12 miles east of Delta Junction.

As many in the Delta Junction area are aware, mile marker 1408 is where the Four-wheeler Fun Run takes place. If work continues as planned it could potentially put an end to the Fun Run, which has existed for nearly 12 years and has moved around in the past. Originally, this family activity took place at Gerstle River.

Scott Newman with Polaris Junction has helped with the Fun Run and says it's a big deal to people and that families plan their vacations around it.

"If they close the road, there isn't much we can do about it. I understand why they are doing it; flooding has always been a problem there," Newman said.

Although Newman understands why the work needs to be done, he stresses how important this event has become for people and hopes work on the project doesn't put an end to the run.

According to Brett Nelson, state conservation engineer with the USDA – NRCS, the original purpose of the project was to eliminate or minimize sediment inputs to the Delta Clearwater River resulting from scour and gully erosion on the agricultural lands, forest lands, and wild lands that comprise the watershed. These sediment loads to the Delta Clearwater River from large scale flood events were believed to have a substantial adverse impact on the fisheries of the Clearwater River, most specifically on the spawning and rearing habitat for Coho salmon. According to Fronty Parker with the State of Alaska Department of Fish and Game, this potential negative impact was considered critical because the Delta Clearwater River is one of the primary producers of Coho salmon in the entire Yukon River drainage.

Additional benefits of the project included reducing flooding of the Alaska Highway, other roads, and agricultural lands. In the mid-1990s, Alaska DOT upgraded the section of the Alaska Highway so that flooding of the highway was no longer a direct concern for the Delta-Clearwater River Watershed Project. Protection of the unique fisheries habitat of the Delta Clearwater River remained the primary focus of the watershed project, with additional benefits including reduced risk from flooding to secondary roads, such as Barley Way, and reduced erosion on the agricultural lands in the area during a flood event.

The original plan included the construction of a 250-foot-wide by 5-mile-long basin which would allow the entire volume of a 50-year flood event to be absorbed into the soil, or infiltrated, south of the Alaska Highway and thereby prevent or substantially reduce flooding, erosion, and ultimately sediment delivery to the Clearwater River system. The excess flows that were not infiltrated were to be channelized and conveyed to the Clearwater Bog to prevent erosion on the agricultural lands. Construction began in 1999, and by 2001 it was evident that problems existed with the engineering and geological assumptions that were the basis for the design. Specifically, actual infiltration rates were much less than was assumed for design purposes. This problem was further compounded by the fact that sediment effectively sealed inputs into the infiltration basin during a flow event, which made it impossible for the water to drain as it was intended to do.

According to Robert Anders, a former resident of the area, the flooding correction was not a fix at all and resulted in worse flooding around his home, stranding him for days. Being the survivor of multiple heart attacks, Anders did not feel he was safe staying in his home with limited access to town. "I decided to sell my house because of the floods," Anders said.

NRCS officials felt it was important to get the landowner out for liability purposes, and the agency recently purchased the home and property for $196,000. The land was placed in a conservation easement and the land and buildings given to the Friends of Delta Agriculture. No one else will be permitted to build on the land.

NRCS and the project sponsors reinitiated the planning process once the infiltration problems became evident. The purpose of this effort was to evaluate other alternatives in an attempt to address the original watershed concerns. The new effort reevaluated the options and settled on construction of a large dry dam as the only alternative that would address the original watershed problems. Unfortunately, this potential solution carried a very high price tag, roughly estimated at $30 million. If funding is not available to undertake an effort of this magnitude and scale, other options would be to attempt to restore the site to pre-project conditions or to simply leave the unfinished project as is in recognition of the fact that, although the project is providing none of the originally intended benefits, it has become a heavily used recreation area.

NRCS is currently scheduling meetings and working with project sponsors to determine a final course of action. Officials anticipate that NRCS and the project sponsors will hold a public meeting this winter in Delta Junction to inform local citizens of the future of this project and to listen to ideas and/or concerns local residents might have about the project as it exists presently or about any future actions that might be taken.

Under authority of Public Law 83-566, The Watershed Protection and Flood Prevention Act, NRCS has the authority to cooperate with state and local agencies and to provide technical and financial assistance in planning and carrying out works of improvement for soil conservation and other purposes. The state and local sponsors of the Delta Clearwater River Watershed Project are the Salcha-Delta Soil and Water Conservation District, Alaska Department of Fish and Game, Alaska Department of Natural Resources, and Alaska Department of Environmental Conservation.

United States Department of Agriculture

NRCS

Natural Resources Conservation Service
800 W Evergreen Ave, Suite 100
Palmer, AK 99645

Delta-Clearwater Project
Interagency Planning Meeting
12/18/2007

Welcome and Meeting Goals- Bob Jones, State Conservationist, NRCS
Bob Jones started the meeting by welcoming the four sponsors involved in the Delta-Clearwater Project (DEC, DNR, ADF&G, SDSWCD). NRCS' objective is to conclude technical and financial assistance to the project in a manner that provides the best possible protection to the fishery within the limitations of economic realities. The goals of this meeting are to discuss the history and current status of the project - no decisions or commitments will be required at this time. This meeting will be questions and discussion only. He expressed gratitude for all the work accomplished by the sponsors, especially the SDSWCD.

Presentation on Delta Clearwater Watershed Ecology- Frosty Parker, Fisheries Biologist, ADF&G
The main points of the presentation were uniqueness of the Clearwater system and its importance as a fishery for Coho Salmon and Arctic Grayling in the greater Yukon drainage. The critical issue facing the Clearwater River is sedimentation. Once sediment is introduced into the river, the system doesn't have the ability to flush it out. Sediment would settle into the spring-fed system and negatively impact fish production. Historically, the drainage pattern was typically subsurface and sheet flow. Development in the area has created more channelized flows, creating an erosion problem.

History and Status of the Current Flood Control Structure, Brett Nelson, State Engineer, NRCS
Brett reiterated that historically the drainage pattern was typically sheet flow and that development in the area has created more channelized flows and an erosion problem. A major flood in the late 80s prompted the implementation of the current Delta Clearwater Watershed Project. The major issues with the project are that the diversions and side inlets above the infiltration channel are eroding, and that the channel itself is not allowing infiltration of water as planned. These problems were apparent once construction started in 2000. Brett said that the project was designed to handle the flow of a 50 year event, but that the few events that have flooded over thus far have only been approximately 5 to 10 year events.

An NRCS Engineering Investigation was conducted in 2001 to review the entire project. The recommendations from that investigation were to:

1. Reinitiate the planning process;
2. Assign a project engineer to oversee the project and reevaluation process (Brett said he had been assigned this task);
3. Stabilize the existing structure for overflow, and redesign the inlet channels to minimize erosion.

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The planning team verified the hydrology and modeled sediment movement, but were unable to verify the sediment sources, a sediment budget, or the fate of the sediment. Brett said there is a data gap with the sediment, but it would take a substantial amount of time and funding to address these data gaps. It has been assumed that sediment entering the Clearwater Bog is detrimental, and we rely on our ADF&G partners for this information. Specific sourcing and quantities of sediment inputs are also unknown. It has been assumed that any amount of sediment input is a negative to the Clearwater system.

The planning team came up with several alternatives.

1) Install a cross basin diversion – this alternative would be costly to install and maintain. It isn't very desirable because the flooding problem would only be moved and there would be no reduction in sediment reaching the Clearwater River.
2) Build a large dam below the existing project – this would be a very large scale installation and would meet all the goals, but an estimate in 2005 was $30 million and would consume at least one summer of construction.
3) Build several smaller dams – this alternative wouldn't be feasible due to the fact that flow from rain events is unpredictable and may simply bypass the dams.
4) Install a grass lined waterway – Brett mentioned this is not a feasible option – soils are not conducive to building a channel
5) Construct water control structure just south of Clearwater River – this would require large easements and loss of ag land.
6) Restore area to pre-project conditions – this would be a long-term project and would not provide any of the original intended environmental benefits
7) Conduct minimal construction efforts to stabilize severe erosion problem areas, buy flood easements, remove the 1408 road, and determine long term responsibility of operation and maintenance. This would not solve the sediment issue.

Brett added that erosion problems are actually worse now, when compared to pre-project levels. The estimated cost alternatives listed above, excluding the large dam, ranged from $1 - $8 million to install. He also said that NRCS, on its own, does not have enough funds to cover the large cost alternatives.

Discussion of Potential Alternatives
A question and answer session was started to raise conversation with the sponsors. A summary of the questions asked:

Q. What happens if we install culverts along 1408 road or move culverts along highway?
A. Just moves problem, still concentrated flow.

Q. What will happen when 1408 road is removed?
A. Beneficial effect, eliminates one source of concentrated flow

Q. Can construction and funding of large dam be staggered?
A. Possibly, but funding is the key.

Q. What will happen when pit is filled in and 1408 road is removed?

A. Site will be at pre-project level, erosion will continue.

Q. If 1408 road is removed and pit filled will it have to be armored?
A. No, sheet flow will reduce erosion, use more vegetation to stabilize site.

Q. Could the Corps of Engineers be involved with "flood control"?
A. Maybe, they need to be contacted.

Q. Since some project could be on Greely, and some erosion caused by military, could they be involved?
A. Maybe – NRCS has works with the Corps on big projects. It would be good to bring in other agencies and partners

Q. How would the dam function?
A. Total containment with spillway for Q100, approx 13ft of standing water.

Q. So if the large dam is NRCS's total fix option, where would the $30 million come from?
A. The large scale options will take a lot of funds. It would be time consuming for NRCS alone to find funding, perhaps even from Congress. There isn't a lot of funds in the watershed program each year. Question would be if the sponsors want to construct the dam, can they find funds as well?

Q. How do you deal with the landowners below the dam and spillway?
A. Flood easement compensation.

Q. If dam was built, where would material come from?
A. The material on-site is sand and gravel, some fines. Plan for seepage. Water impoundment would be temporary, 2 weeks maximum. Fault lines present.

Q. Would there have to be an EA or EIS?
A. Maybe, would be conducted by NRCS.

Q. How long would large dam take to empty?
A. Designed for Q100 storage, standard says dry in 2 weeks, could have migration issues with bison.

Q. How hard do you think its going to be to sell this to the public (dam) with a history of engineering mistakes?
A. NRCS has good reputation for dams. Practice life would be for 50 years, but would probably have little maintenance many years beyond that.

Q. What would be the cost to reclaim the area?
A. Approximately $8 million.

Q. Who would own dam and be responsible for operation and maintenance?
A. The sponsors.

Q. Could US Fish and Wildlife be involved since a fishery is affected?
A. Maybe. DOT too. They need to be contacted.

Q. What would happen in the project is left "as is" and a Q100 storm moves in?
A. It is likely that large headcuts would form between the project and the highway. These would tend to move up the watershed. Large cutting on 1408 road, substantial sediment would settle in DOT pit and ditches, sediment would be carried all the way to Clearwater River.

Q. Are there any options up drainage in the watershed?
A. The idea was tossed around to spread out water, but no alternatives were formed.

Q. What happens if pit is installed next to the Clearwater River?
A. Must be a longer pit, and there would be a loss of ag land for water containment.

Q. Could the area really heal on own, with all of the recreation traffic and atvs?
A. It would take some time. Willow and birch would take a long time with all the traffic Headcuts will eventually stabilize, but would be a risk to recreationists – this would become a liability issue.

Q. Why isn't channelized flow predictable?
A. Moving precipitation, fire effects, and soil characteristics

Q. Could Alaska Highway be used as a dam?
A. That would be up to DOT. When asked in the past, they wanted no part of that idea

Q. What happens next in the process?
A. Public meeting (in Delta Junction), talk about options, sponsor meeting with other agencies (possibly in Fairbanks), official recommendation of sponsors, review from national office.

Q. When will modeling of hydrology and sediment movement be done?
A. Mid-January.

Q. When will communication begin with landowners?
A. Starting with public meeting.

Future Meeting Dates and Locations
Prior to the end of the meeting Phil Naegele, Brett, and Bob then thanked everyone for participating. They stated this is a beginning of a process and that they are open to all input on the project direction. They reiterated that the sponsors need to re-plan and draft a supplement to original project agreement. This agreement would be reviewed by the NRCS Chief and that funding might take Congressional action. A public meeting will be planned to be held in Delta Junction in mid-January.
Adjournment

United States Department of Agriculture

NRCS

Natural Resources Conservation Service
800 W Evergreen Ave, Suite 100
Palmer, AK 99645

Delta Clearwater Watershed Project
Public Meeting – Agenda and Notes
January 16, 2008

Moderator: Jeff Durham, Salcha-Delta Soil and Water Conservation District

Agenda

6:30 p.m.	Welcome Introduction of Meeting Purpose and Process Introduction of Sponsors Introduction of Technical Experts *Jeff Durham, Salcha-Delta Soil and Water Conservation District*
6:45 p.m.	Introduction to the History and Intent of the Watershed Project *Phil Naegele, NRCS*
7:15 p.m.	Current Status of the Watershed Project Pros and Cons of Options Under Consideration *Brett Nelson, NRCS*
7:45 p.m.	Comments from the Public
8:15 p.m.	Wrap Up and Adjournment *Jeff Durham, Salcha-Delta Soil and Water Conservation District*

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Notes

Jeff Durham (moderator), of Salcha-Delta Soil and Water Conservation District welcomed everyone present. He introduced the NRCS as lead agency of the project and the sponsors. He introduced Bob Jones and Catherine Hadley as representing NRCS, Nancy Sonafrank representing DEC, Steve Dubois representing Alaska Department of Fish and Game, Robert Layne representing Alaska Department of Natural Resources, the Salcha-Delta SWCD Board Members and staff that were present including Phil Kaspari, Scott Schultz, Gary Sonnichsen, and Shelly Tappen. Jeff stated that the goal of the evening was to record public comment as a step in process to reevaluate a course of action for the project.

Phil Naegele gave a presentation on the history of Delta-Clearwater area and the Watershed Project. (An outline of his presentation is attached)

Brett Nelson, State Engineer for NRCS, explained that problems with soil infiltration rates were evident immediately during construction. Even small events were filling and overflowing the structure. A engineering assessment revealed that soil infiltration tests varied greatly along the project area. He said that NRCS is in a re-planning process with the sponsors to determine what do we do now to accomplish goals of protecting the Clearwater River, the Alaska Highway, and the surrounding agricultural land. He

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stated an NRCS review team brainstormed many alternatives including diversions, a new water control structure in the mountains and an armored channel to Jarvis Creek, but not many were viable options. He than presented three alternatives that NRCS has developed.

Alternative 1: Construct new flood control measures. He pointed out that this alternative was the only one that would accomplish all original goals. A large embankment would be installed at existing project site that would tie up to higher contour elevations and remove the 1408 Road. This alternative has a high cost estimated at $30 million and might cause great concern for landowners downstream of the impoundment. The large cost of this alternative also concerns sponsors.

Alternative 2: Restore project site to pre-installation. This alternative would get the project area restored to as close as possibly to what the area looked like before the project and is estimated to cost $5-$10 million. He added that with this alternative none of the concerns would be met and flooding will still occur in the area. There is a risk of sedimentation into the Clearwater River until vegetation took hold. Restricting recreation access would be tough.

Alternative 3: Stabilize the existing structure. Brett stated this alternative would have the lowest up-front cost of the three alternatives, but could have long term operation and maintenance issues. Many questions would remain on how to take care of long term stability and who would be responsible. None of the primary concerns would be met. He added that flood easements would be needed if 1408 Road is not removed due to continued possibility of flooding.

After the conclusion of Brett's presentation, Jeff reintroduced the sponsors of the project and reiterated that while the sponsors are each looking after their agencies' missions and responsibilities, they are working together to proceed. Comments will be recorded and considered. He asked that individuals stand, identify themselves as an individual or if they are representing an organization, and make their comment.

- Don Quarberg, individual. Stated he is not satisfied with the explanation of what went wrong with the design. He is also concerned as to what new information makes the presented alternatives viable?

Brett stated that while the great majority of NRCS watershed projects work as designed and provide great environmental benefits for their sponsors, he has no explanations for the design errors other than to acknowledge that errors were made. He said infiltration structures are inherently fraught with potential problems.

- Lee Spears, individual. Mr. Spears stated in 1981 he farmed Tract F (on north side of Alaska Highway, just down gradient from the project). At that time there was no erosion and the land had just cleared. In 1983, he said that some channels were forming. He speculated that these were formed when Lee Fett ran dozer through alluvial fan to food plots from DNR land. He asked why can't water be channeled to Jarvis Creek?

Brett responded by saying that diverting water to Jarvis Creek would likely move the problem to another location – perhaps sending floodwaters toward town. He added the operation and maintenance with such an action would be huge because the system is very dynamic.

- Gary Sonnichsen, individual. Stated he as reservations about constructing the new flood control project outlined in Alternative 1. Mother Nature is unforgiving when we don't plan for having two 100 year events during the dam's lifespan. He what happens if you have an earth quake when the dam is full? How would the sponsors mitigate problems downstream, a dam makes possibility for huge disaster. He said he has a hard time seeing where enough is known to calculate the flow into the structure. He stated that Alternative 2 seemed feasible because the cleared areas are already growing back, but there's always chance for big event. He stated he feels Alternative 3 still won't work because it concentrates the flow.

- Don Quarberg, individual: Mr Quarberg spoke again and asked if a diversion of Granite Creek would be feasible. He said flooding in Delta River is from aufeis in spring. Flooding of Jarvis Creek is in late summer. He said he's not a hydrologist or an engineer, but with headwaters closer with Jarvis, why not divert the channel? He said he saw channels forming when Knife Road cleared in the 1970's. He said he brought it to the attention of the agency back than, but at that time they weren't involved in large scale projects and there was no public interest. He said he feels that NRCS has an obligation to fix the problem (Written comments from Mr. Quarberg summarize these events)

- Bill Dunn, Sportsman's Association: He stated the Sportsman's Association has requested a long term lease from the state on the project site in order to provide quality rifle range for community. He said they didn't realize the scope of the project, including agricultural land or flooding, but asked whatever alternative is decided upon that room be allowed for a rifle range

- Rick Johnson, individual: Stated he spends a lot of time on the river, and doesn't have any answers but wants to know NRCS' preferred alternative He also stated he would like to see a rifle range in the area.

Jeff concluded the meeting by inviting written statements to be sent to Catherine Hadley in the NRCS Delta Junction Field Office.

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The Delta Clearwater Watershed Project

FACT SHEET

A chronology of events related to NRCS' technical and financial assistance

January 2008

Introduction

The Clearwater River originates from springs surfacing in the Clearwater Bog located near the Tanana River. The Clearwater River is one of the only spring-fed river systems feeding into the Yukon River, and is important rearing habitat for Coho salmon and Arctic Grayling.

The Delta Clearwater River Watershed, approximately 232,000 acres in size, has always experienced periodic flooding events. The impact of sediment from these events was minimized by the relatively undeveloped nature of the watershed. Beginning in the 1970's land is developed under the state's agricultural land disposal program. In 1978 the Delta Barley Project begins.

In 1982 an undocumented staining of the Clearwater River raised concerns over potential impacts on the River. In 1987 the Granite Creek wildfire brought this issue to the forefront with the Salcha Big Delta Soil and Water Conservation District.

History of NRCS Involvement

In 1987 the Salcha Big Delta Soil and Water Conservation District wanted to better understand the threat of flooding and sedimentation to the watershed and received a grant from the Alaska Department of Environmental Conservation and the Environmental Protection Agency to study the watershed. The study concluded that flooding and erosion threatened the River's fishery habitat and suggested possible solutions. Funding sources were recommended including Public Law PL 83-566 the Watershed Protection and Flood Prevention Act.

In 1989 a major flood event occurs which delivered an estimated 16,800 tons of sediment into the Clearwater River.

In 1992 NRCS assistance was requested to initiate a small watershed planning project under PL 83-566. The Salcha Big Delta SWCD becomes an active sponsor of the project. On March 17, 1993 the Chief of SCS (NRCS) granted authorization to begin the planning process under PL 83-566.

The final Watershed Plan was signed by the sponsors and approved by the Chief of NRCS at a meeting held in Delta Junction on June 5, 1995. This plan includes infiltration as the basis for the selected alternative through a series of water spreading diversions.

Infiltration test performed by a geologist in 1997 indicated a lower infiltration rate than originally designed. In October of 1998 a plan supplement is developed that recommended a large infiltration basin as the preferred alternative to the series of spreading diversions.

The view of 1408 Road during a flood event.

In September of 1999 the construction of the watershed infiltration basin begins.

In the late summer of 2000 flood waters fill the basin. In 2001 it becomes evident that there are problems with the project and an engineering investigation occurs. Additional infiltration testing is done along a drill line the entire length of the proposed project. Test results confirm a lower than expected infiltration rate as compared to a test performed by a geologist in 1997.

In February of 2002 the engineering report is released and project work is confined to stabilization of the existing site. In July 2003 most stabilization is completed and the project and construction is halted. In 2005 some small safety related work is performed on the site to stabilize some vertical wall and training dike erosion areas.

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CLEARWATER RIVER FLOOD CONTROL PROJECT COMMENTS
(01/16/08)

The following is a brief synopsis of activity as best remembered myself. It is intended to be an abbreviated record of what I remember of the past actions concerning this flood problem.

In 1978 I became the first District Conservationist (DC) with the Soil Conservation Service or SCS (now the Natural Resources Conservation Service or NRCS) in Delta Junction. This Agency was actively involved in the development of the local agricultural lands at that time. Shortly after the summer land clearing demonstration on the north side of the Alaska Highway at mile 1408 in 1977, a rain storm in the Granite Mountains resulted in runoff which deposited sand from the 1408 trail onto this newly cleared land. Little thought was given to the potential of this becoming a threat to the Delta – Clearwater River. However in the summer of 1979 this localized flooding occurred again, with even more sand being deposited in that area.

I considered this erosion a potential problem for the agricultural lands onto which the flood waters were encroaching. Consequently, I made a rudimentary map of the flooding incident by pacing south along the 1408 trail and recording where the water entered the trail from the west. Once it flowed onto the trail, which was lower in elevation than the surrounding area, the trail acted much like a diversion and channeled the water directly down the 1408 trail to the Alaska Highway, across the road and onto the adjacent cleared land. At that time I approached the State Conservationist in hopes of getting some assistance in resolving this flooding and erosion problem. My request was turned down with the statement that this was State Land and the Agency worked primarily with private landowners. My similar request with the Agricultural Stabilization and Conservation Service or ASCS (now the Farm Service Agency or FSA) met with similar results. I estimated that a series of water-bars would allow the water to cross the 1408 trail and proceed toward north east, the direction that the water had moved for generations. The cost to install these water-bars would have been insignificant at that time, however no one was interested in preventing a future major problem.

In October of 1979 I left the SCS and became the first Agricultural Extension Agent with the University of Alaska Fairbanks in Delta Junction. Other responsibilities precluded my continued observation of the flooding situation on the 1408 trail.

Some time, not too long after 1979, the Agricultural Action Council sponsored and funded the creation of a bison access trail from the west, near Ft Greely to the Bison Range fields just to the east of the 1408 trail. This access trail exacerbated the flooding and erosion problem at the 1408 trail by collecting runoff from Rhoads and Granite Creeks and actually channeling it onto the 1408 trail. In an act of desperation the Salcha – Big Delta Soil Conservation District (now the Salcha – Delta Soil and Water Conservation District) funded the placement of large round bales of hay/straw across the trail in an effort to force the water back out of the access trail and relieve flooding along 1408. This was knowingly a short term attempt to help control the problem.

This action however, enabled the SWCD to attract the attention of the NRCS as they (SWCD) requested assistance in resolving the flooding/erosion problem that was continuing to escalate at the 1408 trail. Even though I still attended their (SWCD) meetings I did not keep an accurate account of the action taken or received by the District from the NRCS.

Ultimately, NRCS engaged their hydrologists and engineers to assist the District with their project to curb the erosion and flooding hazard at 1408. At some point in time a major 50 or 100 year rain storm in the Granite Mountains resulted in major flooding of all the creeks flowing out of those mountains, including Sawmill, Granite, and Rhoads Creeks. At this time the Clearwater bog filled with runoff water and flooded into the Delta – Clearwater River, which turned a turbid color for the first time in recent history.

Now the NRCS specialist came into action. They now had a project that was estimated to cost millions of dollars, apparently the amount necessary to attract their attention. Of course they requested all the latest data (climatological, hydrological and topographical) from which to design some structure or program that would alleviate the problem. In the meantime their (NRCS) engineers began conducting local public meetings as part of the planning process. The procedure seemed to be that of conducting a public meeting to identify the scope of the problem and acquire historical information, after which they would retreat to Anchorage and analyze all the information while developing alternative plans to control the problem. Periodically (every 4-5 weeks or so) they (NRCS Engineers) would return to Delta for a public meeting to provide information on the potential solutions.

I vividly remember one of the meetings with the NRCS Lead Engineer from Anchorage, who had attended the previous meeting, some 4 – 5 weeks before and promised to have some options to discuss with the public. He actually had the audacity to begin the public meeting by proclaiming that he had been too busy to devote much time to the Delta – Clearwater Flood Control Project, other than the time driving from his home to the airport for the flight to Fairbanks. This was an obvious indication of how important he considered this project to be – he should have cancelled the meeting and delayed it until he had something to present.

This may reflect the competence level of the NRCS engineering staff however. They eventually constructed a $5-7 million structure just to the south of the Alaska Highway adjacent to the 1408 trail. That structure failed with the first significant rainfall and not even a major rainfall at that. Apparently one of the NRCS engineers performed a water percolation test of the soil at the site of the flood control structure and erroneously calculated that the water would percolate into the soil at the ridiculous rate of some 150 +/- inches per hour (or day or whatever). No one caught the error and they proceeded with their infinite wisdom and built the structure based on that assumption. The public was later informed of the startling discovery that the local soils were of a mica origin and plate-like in structure that actually sealed the pores in the soil; resulting in little if any percolation. I think anyone with any soils experience could look at the sparkling soil

control potential erosion and flooding of the Delta – Clearwater River. I may not have

particles and predict that they were composed of mica – or they could have asked one of the NRCS Soil Scientists for assistance.

NRCS engineers revisited the flood control structure, made some revisions, spend a bunch more public funds on modifications and of course the structure essentially failed again. Now they want to return to the drawing board and reassess the plan, with perhaps a vision of a $30 million diversion, in hopes they will get it right this time.

About the same time the NRCS engineers were working on the Delta – Clearwater Flood Control Project they also forced the village of Ft Yukon to accept a flood control structure in the Yukon River to protect the village fuel depot. Ft Yukon didn't want or need the jetty out into the river because they had always simply moved the fuel tanks in the summer when they were empty and would do so again. That apparently didn't appease the NRCS engineers as they built the structure anyway. Of course, it was later revealed that Congressman Don Young owned a cabin downstream and that this may have been what was to be protected. Of course, the million dollar control structure was destroyed by the river the very first year and had to be redesigned and constructed – more engineering incompetence.

So based on the past performance of the NRCS engineers, where do we (the public) go from here. FIRST, I think the NRCS engineers owe an explanation of why they failed so miserably in the design of the original flood control structure. SECOND, I think the NRCS engineers are obligated to remedy the problem for the public. HOWEVER, they should be obligated to obtain funding for the remedial action only and not have any responsibility for the actual planning/design of that action. Perhaps the funding should be managed by the SWCD who could then hire competent engineers to design a flood control practice that would actually function as designed. This design might also consider channeling Granite Creek into Jarvis Creek, with the construction of a new Jarvis Creek bridge on the Richardson Highway to accommodate the increased flow of that waterway under flood conditions.

I offer this information as one person's view of what has transpired with the efforts to control potential erosion and flooding of the Delta – Clearwater River. I may not have the answer to the problem but I do know that another multi-million dollar fiasco by the NRCS engineers is not the answer. If we do anything again, let's be absolutely certain that it has a reasonable chance of success unlike the haphazard approach taken in the past.

Thank you for your time and consideration in this matter.

Don Quarberg
HC 60 Box 3070
Delta Junction, AK 99737

United States Department of Agriculture

NRCS

Natural Resources Conservation Service
800 W Evergreen Ave, Suite 100
Palmer, AK 99645

Briefing: The Delta Clearwater Watershed Project

January 30, 2008

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FACT SHEET

The Delta Clearwater Watershed Project

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January 2008

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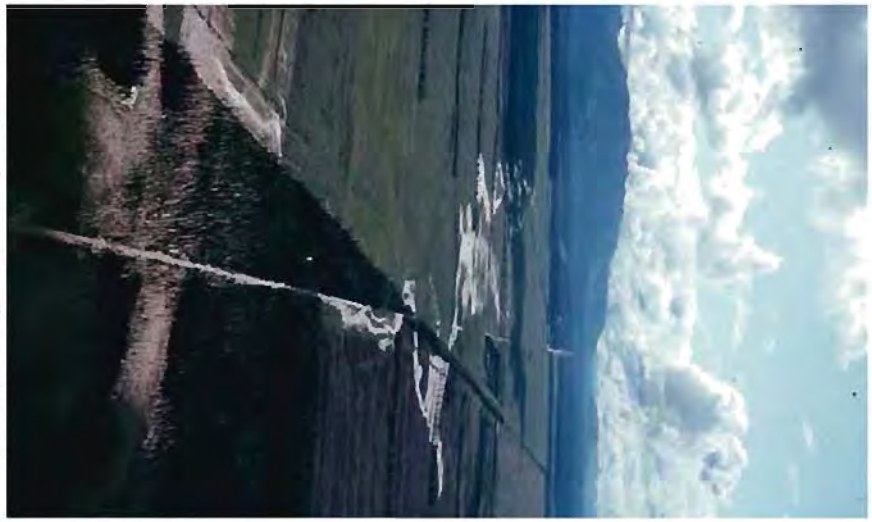
Sediment-laden water in the Clearwater system following a flood event.

Erosion in the forested lands.



Floodwaters from Rhodes creek cross agricultural lands

Floodwaters crossing the Alaska Highway at 1408 Road

An erosion gully on agricultural land caused by flooding

Erosion damage behind training dikes

Flooding Impacts

Infiltration basin standing full of water

Floodwaters entering basin via side inlet 1

Floodwaters flowing out of the basin through the primary spillway

Erosion damage to riprap work near Alaska Highway

Headcuts forming behind training dikes

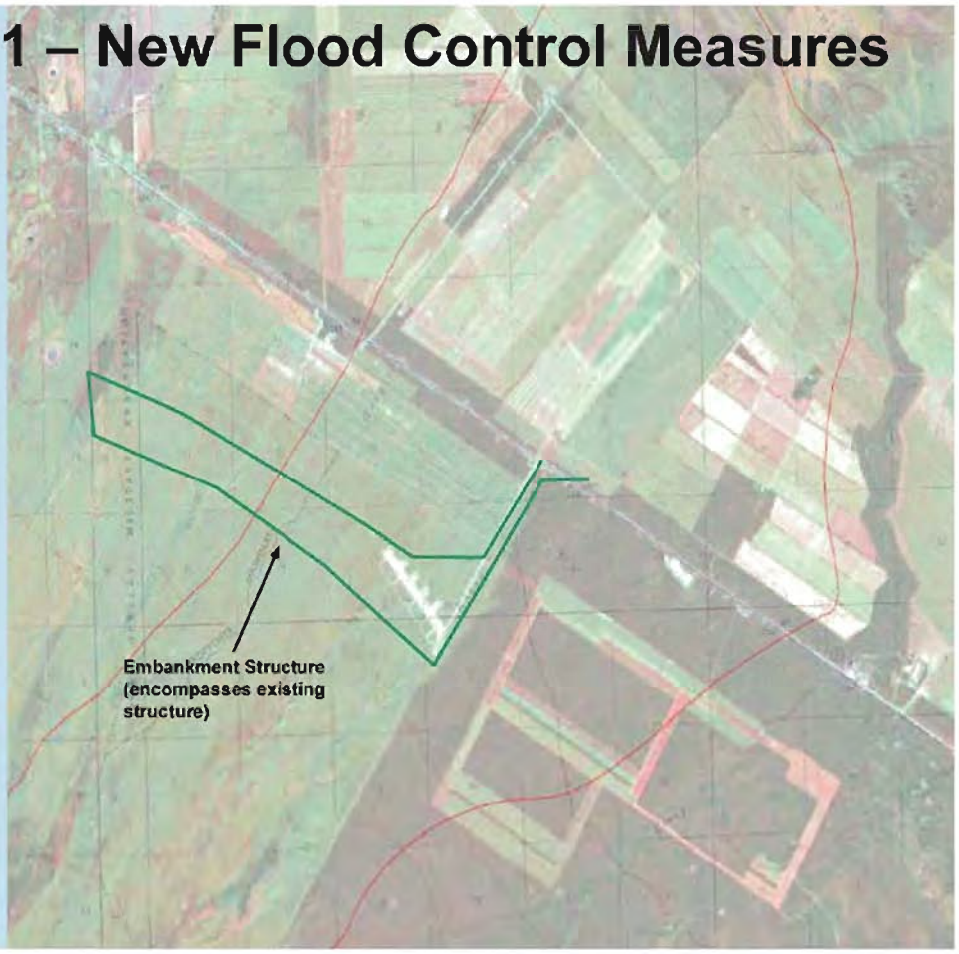
Erosion damage behind training dikes

Alternative 1 – New Flood Control Measures

PROS:
- Reduces sediment delivery to bog/river
- Minimize risk of uncontrolled flow (all drainages)
- Reduce flooding, sedimentation, and erosion on ag land
- Minimize loss of ag land

CONS:
- High installation cost
- Large-area disturbance
- Some residents living below the structure
- Alteration of watershed hydrology

O&M Activities:
- Control vegetation on embankments
- Repair animal trail, erosion, or other damage to embankment
- Maintain spillway-including removal of any debris accumulation around spillway(s) following a flow event

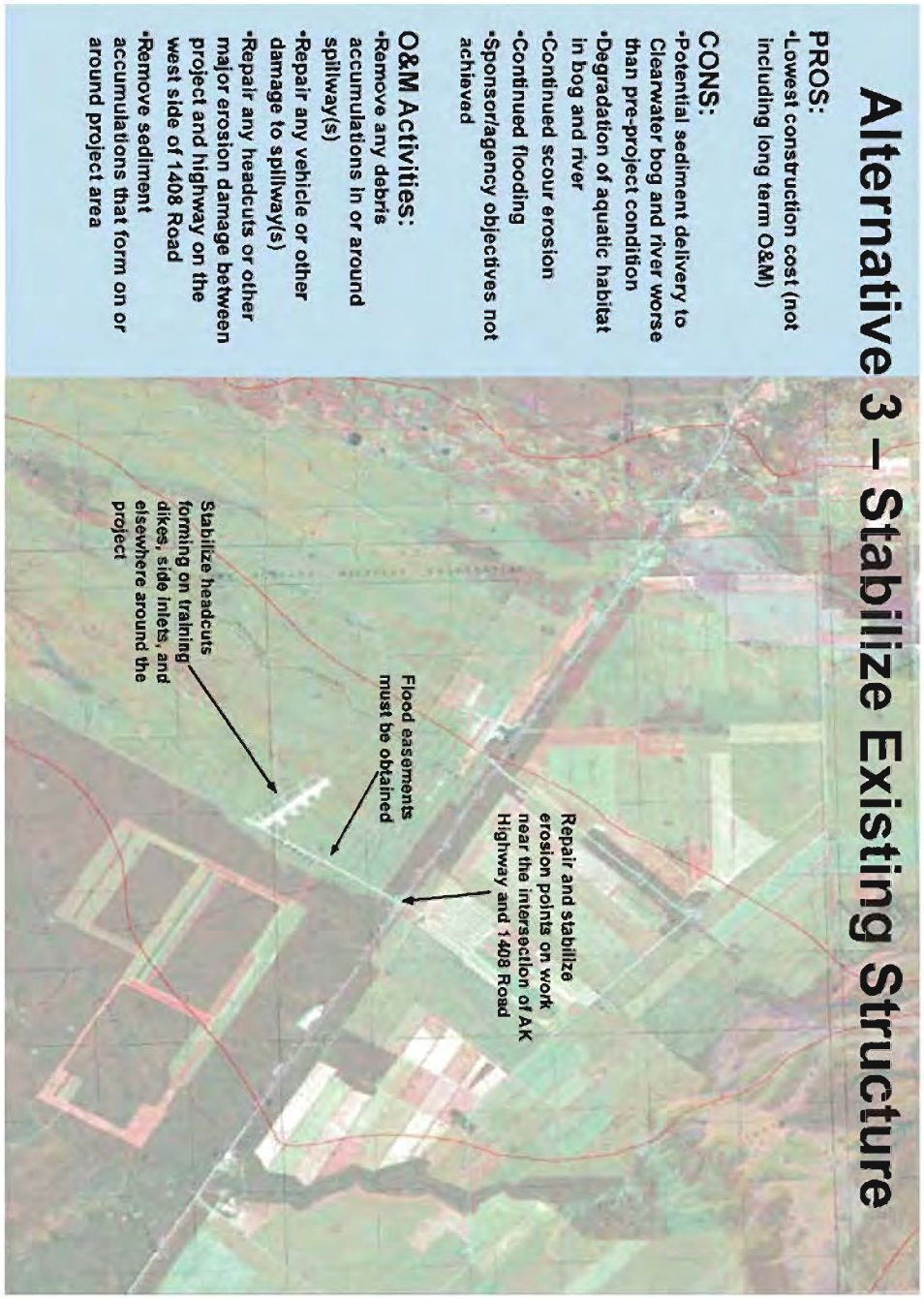


Alternative 2 – Restore Project Site

PROS:
- Returns project site as nearly as practical to pre-project conditions

CONS:
- Increased risk of sediment delivery to Clearwater Bog and River until site is naturally revegetated (may take many years)
- Continued degradation of aquatic habitat in bog and river
- Continued scour erosion
- Continued flooding
- Sponsor/agency objectives not achieved

O&M Activities:
- Repair any erosion or other damages that may occur over the years while the natural revegetation process is progressing. This may include sediment removal if significant erosion occurs on or around the site.



Discussion of the Sponsors of the Delta Clearwater Watershed Project
February 27, 2008
9:30 a.m. - 4:30 p.m.
Copper Meeting Room, Pikes Waterfront Lodge, Fairbanks AK

NOTES

In Attendance:
Robert Layne, State of Alaska Division of Natural Resources, Mining Land and Water
Gary Prokosch, State of Alaska Division of Natural Resources, Mining Land and Water
Gary Larsen, Army
Jeffrey Durham, Salcha Delta Soil and Water Conservation District
Donna Molitor, Salcha Delta Soil and Water Conservation District
Larry Molitor, Salcha Delta Soil and Water Conservation District
Phil Kaspari, Salcha Delta Soil and Water Conservation District
Bryce Wrigley, Salcha Delta Soil and Water Conservation District
Lynn Kent, State of Alaska Department of Environmental Conservation
Missy Corrigan, State of Alaska Department of Environmental Conservation
Fronty Parker, Alaska Department of Fish and Game
Bob Jones, Natural Resources Conservation Service
Phil Naegele, Natural Resources Conservation Service
Cassandra Stalzer, Natural Resources Conservation Service
Brett Nelson, Natural Resources Conservation Service
Meghan Lene, Natural Resources Conservation Service

Bob Jones opens the meeting at 9:30 a.m. by welcoming participants.

Cassandra Stalzer provides a brief update on the public meeting held in Delta Junction January 16, 2008. Stalzer distributes notes from that meeting, one written comment, and a copy of a newspaper story resulting from the meeting.

Bryce Wrigley provides an overview of the meeting hosted by the Soil and Water Conservation District January 22. Concern with Option 1 is increase in risk to more residents than is currently presented with the 1408 Road erosion. Continuing District maintenance of the project as per Option 3 is not desirable. The District thought that Option 2 with the addition of flood easements and various land treatment practices was the best option presented.

Jones updated the group on a meeting at Fort Richardson's Environmental Branch that took place January 30. This meeting was prompted by the sponsor's request. NRCS gave the Army a briefing on the history and current status of the project. The Army representatives, Gary Larsen and Kevin Gardener, indicated they were interested in participating in the project planning in areas where it made sense for them to do so. They emphasized that their programs do not allow them to expend any funds on land outside of the military reservation boundaries.

Gary Larsen indicated the Army is supportive of the goal of the watershed project. The Army engages in some activities that could contribute to sediment, and contributing to

sediment is not acceptable to them Part of the watershed in on military land and his department can spend money on military land. Military training can't be restricted but they can do some creative things like be smarter about reclaiming or rerouting roads. Larsen indicated he cannot spend money to reroute or reclaim roads on lands formerly leased by the military. The USACE has a formerly used military lands program.

Larsen said the Army is working with the district to do an assessment of roads on existing lands and plan to put more roads in the area – mostly East/West access trails The district is designing those roads.

There was a discussion about not getting the USACE involved in the construction of new flood control measures at the site because of timeline and expense.

Durham: 60-70 percent of the construction of Option 1 would be on military land. The military was part of the planning process in the 90s, and the district has decided to invite the military to be involved with the sponsors to evaluate the current proposed options.

Larsen: any project on military land proposed by outside entities must go through BLM for real property and Army concurrence.

Layne: would the original watershed project have worked if it were completed?

Nelson: percolation tests were run every 500 feet along the proposed infiltration channel route The results were perc rates from 0 to 70 ft/day, with higher rates to the west. The perc rates decreased with time and presupposed sediment not sealing the project. Sediment basins were constructed in the existin project but the fines percolated into the gravel essentially sealing it

Durham: Nobody predicted the difficulty in stabilizing the project – NRCS determined that sediment was flushing out from under the forest mat in areas where the ground had been disturbed.

Layne: How does Option 2 protect the Clearwater?

Durham: It doesn't. But we have to step away from this project and find other opportunities to protect the river.

Wrigley: The frequency of events hasn't increased – but it takes a smaller event to be a problem.

Durham: We've seen clean water coming in (to the structure) and sediment laden water going out – at least NRCS stopped construction when they saw a problem.

Nelson: The project has not made flow reaching the highway more frequent but agreed that flows have more sediment than in the past

Layne: There is more sediment coming out of the forest area than pre-project

Nelson: Embankment (Option 1) is the only option to stem sediment from 100 year events – grassed waterways and water spreaders might protect from sediment in 2 to 5-year events. The project is currently focusing on Rhodes and Granite Creeks, although, there is a potential for sedimentation from Sawmill creek into Clearwater River. Dams are much less management intensive(operation and maintenance) than channels. Restoration of site would cost $5-$10 million. NRCS has currently spent close to $5 million on project over course of several years.

Design Information and Waterflow Modeling-Brett Nelson

Discussion on Restoration:
Nelson presented existing project topography model to proposed project restoration level topography. Both events represented 3,000 CFS flow. NRCS proposing that culverts to the east of the project going across Alaska Highway will carry more water with project restoration since 1408 road would no longer function as a levee as it currently does. Dam would provide protection to people down below from an event With restoration, people within '5 mile zone' are at risk of flooding with restoration proposal.

Delta SWCD responded that based upon meeting with local producers, producers who are directly affected by that project felt that with project restoration they would be prepared for flooding events, but if the dam failed, the flooding event would be unexpected and the scale of the flooding event would be much larger resulting in a catastrophe.

Nelson handed out "Delta Clearwater Watershed Project Alternative #2 (Restoration)" information The project will also require more fill to compensate for moss-mat that was present pre-project. Any type of material, gravel, rip-rap, pit-run, etc. could be used to fill in basin Would "hoard" fine material present on site for top layer to act as an adequate seed bed Would we seed area to grass? May slow down willow and other woody species re-growth Nelson not sure at this point will leave to vegetative specialist to comment on.

Discussion on Dam:
SWCD commented on high fuel prices and suggested NRCS reconsider estimate on "Project Data Summary Sheet (Draft), Granite-Rhodes Dam, Project Scoping." Nelson said this estimate was over 2 years old. Nelson commented that the cost estimate for the site restoration was based on current rates, and suggested we consider what the price will be two-three years down the road during project construction, which could be significantly higher.

The dam design is Class C for dam-high hazard because of people living below The proposed structure would be built to handle a 100 year event with emergency spill-ways and based upon NRCS design standards. The proposed structure would be designed to hold water 10-14 days max

SWCD concerned about cost for gravel fill ($14.00/cy). Especially if they are traveling 30 miles from site to get material and it's not even crushed. Nelson reminded everyone that these estimates for the cost of the embankment structure were done in 2005 A lot of the costs estimates that he provided are probably up in price Were "generous in estimates" for several components to figure a "worse case scenario."

Question on how the proposed dam would impact the creeks that the structure would encompass. Nelson explained Rhodes and Granite creeks are intermittent/ephemeral.

The dam would trap and collect all water coming from watershed and release it at a controlled rate.

SWCD questioned how NRCS would address building the dam. Would it be built in stages? The last part of the dam to close would be the area water is currently flowing out.

O&M would include, after every flow event, someone would need to go out and observe if any debris plugging spillway. Design would include that dam would still be able to function even with sediment filling in over a period of time.

If O&M is estimated at 1% of the project installation cost, SWCD concerned about annual O&M expense. NRCS explained this is an off the cuff figure, however until we know what the exact scope of the project is, this figure is a rough estimate only. If this alternative to the project is an option, the cost estimate would be refined and allow a better estimate of what the O&M would be. It was made clear that although NRCS typically uses a figure of 1% of installation costs as a rough annual O&M figure, our experience has shown that O&M on embankments tends to be much much less than this estimate.

Sponsor Round Robin

Jones: Clarifies that additional land treatments would be a separate process.

Durham: SWCD proposed doing an EA on all three alternatives to accommodate the decision making process

Nelson: Clarifies that building a dam would not require removal or restoration of the existing project

Prokosh: Has not brought the issue to his supervisor yet Stated he is still fact finding.

Layne: Each meeting brings out more information. There are some questions that must be answered. Doesn't see state support of maintenance costs as a big problem.

Larsen: Only option 1 reduces potential for sediment – if the project doesn't attempt to reduce sediment, then the Army doesn't need to be involved.

Prokosh: The state doesn't like to own dams. This project was constructed on state lands so we have to stay involved.

Kent: DEC is only interested in water quality – the interest is in protecting the Clearwater system, needs more information about sediment input before endorsing an option.

SWCD suggested we refresh our view of the watershed and perhaps there is an alternative location for a structure even though NRCS has explored other alternatives.

Nelson: will send the group a list of alternatives considered by the engineering design team and a summary of why they were set aside. NRCS opinion is that alternative #3 is not a viable alternative. Restoration, alternative #2, may not be best "naming convention" since we won't be able to re-vegetate moss-mat NRCS has considered this and has called it this to differentiate from "stabilization", alternative #3; even though it will not be possible to fully restore to pre-construction and pre-fire conditions.

Bob Jones made the comment that NRCS NHQ does not have the money available to do any of the alternatives, unless it's earmarked specifically for the project. There is only a $30 million budget for NRCS Watershed Program this year-nation wide If dam is the consensus, would require congressional action from federal level and legislative action from the state.

SWCD mentioned it is going to be extremely difficult to find candidates to earmark finds for a project of a dam SWCD said the reason why they are taking the approach of not supporting a dam is because "the money isn't there".

According to Fish and Game, DCW is the largest Coho salmon spawning area in the entire Yukon drainage area.

Bob does not have a date set for visit to Washington. Another meeting for DCW will not be planned until he gets feedback from NRCS NHQ.

United States Department of Agriculture

NRCS

Natural Resources Conservation Service
800 West Evergreen Avenue, Suite 100
Palmer, AK 99645
907-761-7760 907-761-7790 FAX
www.ak.nrcs.usda.gov

<<Title>> <<FirstName>> <<LastName>>
<<Position>>
<<Division>>
<<Department>>
<<Address>>
<<City>>, <<State>> <<Zip>>

JUL 1 0 2009

RE: Delta-Clearwater Watershed Restoration Agency Scoping Letter

«GreetingLine»

The U.S. Department of Agriculture Natural Resources Conservation Service (NRCS) is proposing a watershed restoration project within the Rhoads Creek and Granite Creek sub-watersheds of the Delta-Clearwater River. The project would remove the watershed control measures previously installed by NRCS and restore the site to as close to pre-project conditions as practicable. The project is located in portions of Sections 27, 28, 33, 34, and 35 of Township 11 South, Range 12 East, and Sections 3 and 4 of Township 12 South, Range 12 East, of the Fairbanks Meridian, near Mile 1408 of the Alaska Highway (Latitude 63.914° North, Longitude 145.388° West). NRCS is preparing an Environmental Assessment for the proposed project.

NRCS, in cooperation with the Salcha-Big Delta Soil and Water Conservation District (SWCD), Alaska Department of Fish and Game (ADF&G), Alaska Department of Environmental Conservation (ADEC) and the Alaska Department of Natural Resources (ADNR), conducted a watershed planning effort which was completed in 1995. This plan included structural and non-structural measures intended to reduce sediment deposition into the Delta-Clearwater River and Clearwater Bog as well as reducing flood and sediment damage to cropland, the Alaska Highway, local roads, and recreation areas. A supplement to this plan was completed in 1998 in order to address a reduction in the infiltration rate from the original estimate to that identified during field tests.

Phase I of construction, initiated in September 1999, consisted of approximately 5,000 linear feet of infiltration basin along with side inlets and training dikes installed at Mile 1408 Road on the south side of the Alaska Highway. Construction of Phase I was completed in July 2001. Flow events during and after construction identified numerous problems with the project as designed. In response to these issues, a formal engineering investigation was completed in 2002. The report recommended a revised planning effort analyzing a wide variety of alternatives. An extended planning effort involving the project sponsors, other local, State and Federal agencies, and the general public was conducted between 2003 and 2008. The proposed project is the outcome of this 5-year multi-agency planning effort.

Helping People Help the Land

An Equal Opportunity Provider and Employer

A more detailed description of the proposed project is included in the enclosed Agency Scoping Attachment. Early identification of environmental concerns will facilitate efficient project development. Your agency's input is important at this time to ensure potential impacts of the restoration project are identified and factors to assist in the avoidance or minimization of those impacts are considered.

<<Specifics>>

Your timely response will greatly assist us in incorporating your concerns into project development. For that purpose, we request that you send initial comments to our office via mail or email by **July 31, 2009**. You are also invited to take part in an agency scoping meeting on **August 5, 2009** to review the project and discuss specific issues or concerns on-site. The meeting will begin at 10:00 AM at the NRCS Delta Junction Field Office, Jarvis Building Mile 1420.5 Alaska Highway, and will proceed on-site following an orientation to the project. Final written comments or concerns based upon the scoping meeting are due into our office by **August 20, 2009.**

If you have any questions regarding the proposed project, please contact Mr. Phil Naegele, Assistant State Conservationist (Operations) at (907) 761-7758 or via email at *phil.naegele@ak.usda.gov*. Technical questions can be directed to Mr. Brett Nelson, State Conservation Engineer, at (907) 761-7717 or via email at *brett.nelson@ak.usda.gov*.

Sincerely,

Robert N. Jones

ROBERT N. JONES
State Conservationist

Enclosure: Agency Scoping Attachment

Title	First Name	Last Name	Position	Division	Department	Address	City	State	Zip	Specifics
Mr	Larry	Bright	Branch Chief	Environmental Review	U.S. Fish and Wildlife Service	101 12th Avenue, Room 110	Fairbanks	AK	99701	In addition to identifying any issues or concerns that your agency might have with the proposed project, please provide the following information: 1) Any additional information and/or data on Threatened, Endangered, Candidate, or Proposed species in the project area that might potentially be impacted by the proposed project; 2) Information or data on important fish and wildlife habitats or migration corridors potentially affected by the proposed project; 3) The location of known active or inactive eagle nests in the project area; and 4) Identify any permits and/or clearances to be obtained from your agency for the proposed project.
Ms	Irene	Catalone	Local Government Specialist	Division of Community Advocacy	State of Alaska DCCED	211 Cushman Street	Fairbanks	AK	99701-2744	In addition to identifying any concerns or issues your agency might have with the proposed project, please identify any local community plans or improvement projects that could potentially be impacted by the proposed project.
Ms	Marcia	Combes	Director	Alaska Operations Office	U.S. Environmental Protection Agency	222 W. 7th Avenue, #19	Anchorage	AK	99513	In addition to identifying any issues and/or concerns that the EPA might have with the proposed project, please identify any permits and/or clearances to be obtained from your agency for the proposed project.
Mr.	Torston	Ernst	Environmental Specialist	Division of Spill Prevention and Response	State of Alaska DEC	610 University Avenue	Fairbanks	AK	99709	In addition to identifying any concerns and/or issues the Division might have with the proposed project, if you know of any confirmed or suspected contaminated sites, spills, and any registered underground or above-ground storage tanks that might affect or be affected by the proposed project, please provide that information.
Ms	Sandy	Jacobson	Field Manager	Central Yukon Field Office	U.S. Bureau of Land Management	1150 University Avenue	Fairbanks	AK	99709	We have researched the ADNR Land Records Information System, and have identified federal lands administered by your agency in the vicinity of the project. Based on preliminary research, the restoration of the drill line may be on BLM-managed lands. In addition to identifying any concerns or issues that your agency might have with the proposed project, the following information is requested: 1) Please provide the legal description and a map of the BLM-managed lands near Mile 1408 of the Alaska Highway; 2) Identify any management objectives or agency activities on those lands that may be impacted by the proposed project; and 3) Identify any permits and/or clearances that would need to obtained from BLM for the proposed project.
Mr	Christy	Everett	Manager	Fairbanks Regulatory Field Office	U.S. Army Corps of Engineers	2175 University Avenue, Suite 201E	Fairbanks	AK	99709-4910	In addition to identifying any concerns or issues that your agency might have with the proposed project, please provide a copy of USACE permit 4-1999-0120 and any associated wetland delineations and jurisdictional determinations. Also please identify any permits or clearances to be obtained from your agency, including General Permits which may apply to the proposed project.
Mr	Robert	McLean	Manager	Habitat Division	State of Alaska DFBG	1300 College Road	Fairbanks	AK	99701	In addition to identifying any concerns or issues your agency might have, please identify any permits or clearances required by your agency for the proposed project.

Title	First Name	Last Name	Position	Division	Department	Address	City	State	Zip	Specifics
Mr.	Chris	Miles	Northern Region Manager	Division of Mining, Land and Water	State of Alaska DNR	3700 Airport Way	Fairbanks	AK	99709	The Alaska Department of National Resources is a sponsor of the original watershed project, and the proposed restoration project is located on lands administered by your agency. In addition to identifying any concerns or issues that your agency might have with the proposed project, the following information is requested: 1) If you know of any other existing and/or proposed land use plans and can identify any land use objectives that might conflict with the proposed project, please provide that information; and 2) Please identify any authorizations that would be required by your agency for the proposed project.
Mr	Lawrence	Peltz	Habitat Conservation Specialist		National Marine Fisheries Service	P.O. Box 43	Anchorage	AK	99513	In addition to identifying any issues or concerns your agency might have with the proposed project, please provide any additional information that you may have concerning Essential Fish Habitat in the project area.
Ms	Kim	Speckman	Environmental Program Specialist	Division of Water	State of Alaska DEC	610 University Avenue	Fairbanks	AK	99709	In addition to any concerns or issues your agency might have, please identify any permits or clearances required by your agency for the proposed project.
Mr	Charles	Knight	Northern Region Manager	Division of Agriculture	State of Alaska DNR	1648 S. Cushman Street, Suite 201	Fairbanks	AK	99701	In addition to any concerns or issues your agency might have regarding the proposed project, please identify any recommendations your agency may have regarding revegetation of the current site.
Mr.	Howard	Eilers	Maintenance & Operations Director	Northern Region	State of Alaska DOT&PF	2301 Peger Road	Fairbanks	AK	99709-5316	In addition to any concerns or issues that your agency might have, please identify any permits or clearances that your agency may require as part of the proposed project.
Mr	Rex	Wrigley	Chair		Delta-Delta SWCD	P.O. Box 547	Delta Junction	AK	99737	In addition to any concerns or issues regarding the proposed project, please provide any recommendations your organization may have for restoration of the current site.
Mr	Mike	Tvenge	Administrator		City of Delta Junction	P.O. Box 229	Delta Junction	AK	99737	In addition to any issues or concerns the City of Delta Junction may have regarding the proposed project, please provide any information you may have regarding land use in the project area.

Purpose and Need

The purpose of the proposed project is to mitigate the downstream effects of the failure of the original Delta-Clearwater Watershed Project, Phase I of which was completed in July 2001. Severe erosion at the project site and increased channelization of surface water have resulted in flows across lands for which no flood easements have been obtained and an increased potential for sediment to reach the Delta-Clearwater River and Clearwater Bog during flow events.

Restoration of the existing project site does not accomplish any of the original goals of the watershed project. This restoration effort simply seeks to undo, to the extent practicable, the increased erosion, flow concentration, and other negative aspects of the partially completed project.

Project Background

Setting. The Delta-Clearwater River is a near pristine river that is spring fed from an alluvial aquifer. The Clearwater Bog, a wetland complex along the upper reaches of the Delta-Clearwater River, contains a network of springs and is the primary water source for the river. The spring fed waters of the Delta-Clearwater River maintain a relatively stable temperature year-round preventing much of the river from freezing during the winter. Given the spring fed nature of the river, it lacks the necessary "flushing flows" needed to flush sediment deposits. Sediment inputs decrease the available spawning habitat, composing a substantial negative impact. The coho salmon population is especially impacted

The Delta-Clearwater River watershed is approximately 232,000 acres in size. Major subwatersheds include Sawmill Creek (109,400 acres), Granite Creek (32,000 acres), and Rhoads Creek (55,700 acres). All three subwatersheds are ephemeral systems. About 34,900 acres drain directly or through smaller tributaries into the Delta-Clearwater River. After flowing out of the Granite mountain range, Sawmill, Granite, and Rhoads Creek all flow to the north over a gently sloping (2-3 percent slope) outwash plain of the Tanana River. At present, Granite Creek has been pirated by Rhoads Creek between the Granite Mountains and the existing project works, so all normal flows and small flood flows in these subwatersheds now flow in the Rhoads Creek channel, located at mile 1408 of the Alaska Highway.

Watershed Plan. The U.S. Department of Agriculture Natural Resources Conservation Service (NRCS), in cooperation with the project sponsors (sponsors) including the Salcha-Big Delta Soil and Water Conservation District (SWCD), Alaska Department of Fish and Game (ADF&G), Alaska Department of Environmental Conservation (ADEC) and the Alaska Department of Natural Resources (ADNR), completed the Delta-Clearwater River PL83-566 Watershed Plan and Environmental Assessment in June 1995. The primary purpose of the project, as indicated in the plan, was to protect the unique coho salmon and arctic grayling habitat found in the Delta-Clearwater River and the associated Clearwater Bog. The plan depicts reducing sediment deposition that occurs in the fish habitat. The plan also described reducing flood and sediment damage to cropland, the Alaska Highway, local roads, and recreation areas. The plan incorporated

structural and non-structural measures in the Sawmill Creek subwatershed and structural measures in the Rhoads and Granite Creek subwatersheds.

The measures on Sawmill Creek subwatershed included 10 grade stabilization structures. Non-structural measures included floodplain easements on 1,300 acres and permanent wetland easements on 1,100 acres. Structural measures in the Rhoads and Granite Creek subwatersheds consisted of a three-mile diversion between the two creeks and 3.8 miles of waterspreading diversions. Also included were 4.3 miles of grassed waterways. These structural measures in the Rhoads and Granite Creek subwatersheds were designed to reduce peak flows in these subwatersheds from approximately 2,700 cubic feet per second to 500 cubic feet per second for the 100-year frequency storm event. They were estimated to reduce the sediment delivery to the Delta Clearwater River by about 84 percent when compared to the 'future without project' condition.

Supplemental Watershed Plan. The original project design and reductions in peak flows and sediment delivery were based on a water infiltration rate into the soil profile of 285 cubic feet per square foot per day. Prior to funding and commencement of construction on the project, concerns were raised questioning the validity of the original infiltration rate estimate. In an attempt to address these questions, test drilling and permeability tests were conducted at various sites along the proposed project in October 1997. The results of this testing are recorded in the Delta Clearwater Geologic Investigation report by Robin S. White, dated November 1997. Based on the data from the geologic investigation, the planners revised the estimated water infiltration rate to 40 cubic feet per square foot per day. This large reduction in the estimated infiltration rate made the original proposed structural measures for Rhoads and Granite Creek subwatersheds ineffective. Therefore, a new plan with a different combination of structural measures was needed, ultimately resulting in the development of the Delta Clearwater River Watershed Plan, Supplemental Plan No. 1. The new plan was signed in October 1998.

The decrease in infiltration rate from 285 cubic feet per square foot per day to 40 cubic feet per square foot per day made it impossible to infiltrate the runoff from a 100-year flood event in the Rhoads and Granite Creek subwatersheds through the planned waterspreading system. The new plan, as set forth in Supplemental Plan No. 1, modified the original plan by reconfiguring the waterspreading system to a single four-mile infiltration basin which would intercept both Rhoads and Granite Creek. One water control structure would be used to divert flow out of the Rhoads Creek channel into the waterspreading diversion. The infiltration basin was expected to dissipate a 50-year storm event. Any flow in excess of a 50-year storm event would be allowed to bypass the infiltration basin and would be conveyed through the watershed to the Clearwater Bog by means of a grassed waterway. The grassed waterway capacity was designed to accommodate bypass flows through the system up to a 100-year flood event

Project Construction. Construction commenced on Phase I of the project in September 1999 and was completed in July 2001. This phase consisted of approximately 5,000 linear feet of the planned 4 miles of infiltration basin between Rhoads and Granite Creek, along with appurtenant side inlets and training dikes. No work has been performed in the

Rhoads/Granite Creek subwatersheds on the north side of the Alaska Highway, nor has any construction work been performed in the Sawmill Creek subwatershed.

Phase I site approximately 4 years after construction. Drill line proceeds from site to Northeast.

Several flow events occurred during construction that demonstrated numerous problems for the watershed project as planned. In response to these concerns, NRCS requested a formal engineering investigation on the project in July 2001. The investigation team conducted their site visit in August 2001.

Engineering Investigation. The investigation team released the revised Delta Clearwater Watershed Project Engineering Report in February 2002. This report identified three overarching problems with the current plan, as defined in the original Watershed Plan and the Supplemental Watershed Plan No. 1: 1) substantially lower infiltration rates than were anticipated for the infiltration basin, 2) dispersive qualities of native soil causing very high erosion susceptibility, and 3) spillage of flood waters from the existing project works onto private land where no flood easements currently exist. The revised Engineering Report recommended that NRCS and the project sponsors re-initiate the planning process, considering a wider range of alternatives

Re-Planning Effort. NRCS re-opened the planning process on the entire project in an attempt to address the problems brought forth by the engineering investigation team. Re-planning efforts were on-going from 2003 through 2008 and involved project sponsors, NRCS, other Federal, State, and local agencies, and the general public. Brainstorming

was extensive, resulting in 17 primary alternatives being considered. These alternatives ranged from a high hazard dam I the upper reaches of the watershed through restoration of the existing project site. The preferred alternative, restoration of the existing project site, is discussed in the Proposed Action section.

Current Site Status. The training dikes and side inlets of the constructed portions of the project are actively eroding during all flow events. Most of the coarse sediment from this erosion is trapped in the existing infiltration basin but some of the fine particles escape the project area. The existing infiltration basin "spills" flood flows in a more concentrated manner than did the pre-project topography. This concentrated spillage is further exacerbated by the build-up of 1408 Road, which acts as a levee and maintains the concentrated flow for two miles from the existing infiltration basin to the Alaska Highway. Even as large as the existing infiltration basin appears, it does not contain adequate storage to appreciably route or reduce peak flows, even from low return period flow events.

Erosion in one of the side inlet channels to the infiltration basin.

The erosion of the project site is of great concern to NRCS and the sponsors, as in its present condition, the constructed project actually creates a worse scenario for the Delta-Clearwater River than had this project never been attempted. Anecdotal evidence suggests flows are reaching the project area more frequently than they had historically. Worse, these relatively small flows are traveling further down the watershed before naturally infiltrating, due to the confinement of the flow by the existing project works. If a larger storm event struck the area, a catastrophic amount of sediment could deposit in the Delta-Clearwater River.

In addition to the problem of sediment, on-site erosion creates many safety hazards. The eroding areas on the project site created numerous gullies ranging from 0.5 feet to 10 feet in height. Heavy recreational ATV and off-road use of the area causes concern of vehicles falling off the erosional features.

Severe erosion along training dike. Vertical bank height is 10 feet.

A view of erosion from the training dike depicting the risk to ATV and vehicle traffic

The existing "drill line" was constructed to the west of the existing infiltration basin along the remainder of the proposed project centerline. The purpose of this drill line, which was developed under Phase IA of the project, was to ground truth existing photogrammetric survey data and conduct infiltration tests every 500 feet along the remainder of the proposed infiltration basin. This drill line is generally stable at present, but the site is not naturally revegetating as quickly as anticipated due to recreational traffic. Larger scale flood events may create serious additional erosion problems in the vicinity of the drill line.

Finally, due to the existing project works, concentrated flood waters are flowing across at least two parcels of private property south of the Alaska Highway No flood easements are in place on these parcels.

Proposed Action

The preferred alternative is to restore the entire project site as closely as practical to pre-project topography and conditions. Site restoration would involve removing the training dikes, filling the side inlets, filling the infiltration basin, removing the built-up portion of 1408 Road, providing a reasonable planting medium on the restored surface of the site, either seeding or relying on natural regeneration, removal of the flow splitting channels near the Alaska Highway, and purchasing flood easements for affected private property

It is currently anticipated that topsoil material for site restoration would be obtained from berm piles located on nearby agricultural land. These berms are remnant from the land clearing efforts that were part of the original State of Alaska Delta Agricultural Projects, and contain topsoil mixed with high concentrations of organic matter and some woody debris. Using the berm material has numerous benefits as a planting medium. The high concentration of organic matter provides both soil fertility and moisture retention benefits. The berms also serve as seed banks for native vegetation, and the woody debris can be used on the restored site to disrupt overland flow. The berms screened for removal and use will be selected based on criteria that are currently being developed by NRCS Berms which are growing species which are listed on the State of Alaska list of noxious weeds (11 AAC 34.020) will be eliminated from consideration.

The cost of this alternative was roughly estimated at $8 to $10 million dollars. Even with site restoration, some short-term maintenance will be required if the recently restored site is damaged by flow events. While it will be relatively expensive to restore the project site, the re-planning team considered the expense justifiable in light of current conditions and public concerns. This justification is premised on the reduction of erosion from the existing project site by removing the training dikes and side inlets that concentrate inflow to the basin, as well as removing the artificially steep flow gradient into the existing basin. In addition, restoration efforts would involve removing the built-up 1408 Road. The road currently functions as a levee and concentrates flow from the infiltration basin to the Alaska Highway.

Preliminary Research Results

Field observations during flow events, anecdotal reports from long time residents, and pre-project topography and conditions, all suggest that restoration will minimize adverse affects to the Delta-Clearwater River. The following summarizes the results of our preliminary research:

Clean Water Act. Waters of the United States in the project area include the Rhoads Creek channel below the ordinary high water line as well as permafrost-driven black spruce wetlands are located within the project area. These waters are under the regulatory jurisdiction of the U.S. Army Corps of Engineers (USACE). The original watershed project was permitted under USACE permit 4-1999-0120. The proposed project would involve returning Rhoads Creek to its original configuration, which followed the Mile 1408 road. There are no plans at this time to discharge dredged or fill material outside of the original disturbed area. A USACE Section 404 permit will be required for the work in Rhoads Creek. Construction projects of greater than 1 acre also require a Section 402 discharge permit, which would be either a National Pollutant Discharge Elimination System (NPDES) permit from the Environmental Protection Agency (EPA) or an Alaska Pollutant Discharge Elimination System (APDES) permit from the Alaska Department of Environmental Conservation. This permit will require the preparation and implementation of a Storm Water Pollution Prevention Plan (SWPPP) for the project.

Neither Rhoads Creek nor Granite Creek are on the most recent list (2008) of Alaska's Impaired Waters.

Coastal Zone Management Areas and Coral Reefs. According to the most recent version of the Alaska Coastal Zone Boundary Maps, the project is not located within the coastal zone. There are no coral reefs in the project area.

Cultural Resources. The restoration project will take place on ground that was extensively disturbed during the construction of the previous project. Berm piles which may be used as material sources were also previously disturbed, as they are a remnant feature of land clearing activities. NRCS does not anticipate impacts to cultural resources as a result of the restoration project. Section 106 consultation is being initiated with the Alaska State Historic Preservation Officer (SHPO) regarding potential impacts to cultural resources.

Endangered and Threatened Species. A search of the U.S. Fish and Wildlife Service (FWS) Threatened and Endangered Species System (TESS) database indicates that there are no Federally-listed Threatened Endangered, Proposed, or Candidate species which occur in the project area. State Species of Special Concern which may occur in the project area include the American peregrine falcon (*Falco peregrinus anatum*), olive-sided flycatcher (*Contopus cooperi*), gray-cheeked thrush (*Catharus minimus*), Townsend's warbler (*Dendroica townsendi*), and blackpoll warbler (*Dendroica striata*). This restoration project is not anticipated to affect existing habitat for these species at the site of the previous project. Berm removal may adversely affect individuals of these species, therefore it is expected that this activity will be done in accordance with the FWS

Advisory: Recommended Time Periods for Avoiding Vegetation Clearing in Alaska in order to Protect Migratory Birds. Loss of habitat for these species from berm rows is expected to be substantially offset by the long-term restoration of forest cover at the restoration site.

Environmental Justice. The proposed restoration project is not expected to have disproportionate adverse environmental or human health effects on low-income, minority populations or Alaska Native Tribes.

Fisheries and Essential Fish Habitat. Rhoads Creek is an ephemeral stream that does not maintain populations of either resident or anadromous fish species. According to the Alaska Catalog of Waters Important for the Spawning, Rearing or Migration of Anadromous Fishes, the Delta-Clearwater River is spawning habitat for chum salmon (*Oncorhynchus keta*) and spawning and rearing habitat for anadromous Coho salmon (*Oncorhynchus kisutch*). The river also has a resident population of Arctic grayling (*Thymallus arcticus*). The proposed restoration project would reduce the likelihood for and extent of sedimentation of the Delta-Clearwater River from the Rhoads Creek and Granite Creek subwatersheds back to approximately pre-construction levels.

Floodplain Management. The proposed restoration project is within the 100-year floodplain of Rhoads Creek and Granite Creek. The original PL83-566 watershed project was an attempt to mitigate downstream flood damage. This restoration project will return the floodplain to approximately pre-construction floodplain patterns.

Invasive Species. The most likely vector for noxious and invasive species onto the restoration project would be in the material obtained from berm piles located on nearby agricultural land. The berms will be screened for removal and use will be selected based on criteria that are currently being developed by NRCS. Berms which are growing species which are listed on the State of Alaska list of noxious weeds (11 AAC 34.020) will be eliminated from consideration.

Migratory Birds. Migratory waterfowl, shorebirds, and passerines are all present on the current site to some extent. Although the infiltration basin does not retain water for long periods and has not developed aquatic or riparian characteristics, the basin is used as a resting area for both migratory waterfowl and shorebirds. Passerines nest in the forested areas surrounding the project, and small raptors have been seen hunting in the grassy areas surrounding the existing project. This restoration project would remove the resting area for the migratory waterfowl and shorebirds, although the overall habitat value of this area is minimal. The restoration of the site would increase the hunting habitat for small raptors in the short term, and would eventually be restored to a forested habitat suitable for passerines.

Natural Areas. The existing flood control project is located within a largely natural area located south of the Alaska Highway. This area is under the management of the Alaska Department of Natural Resources (ADNR) and the U.S. Bureau of Land Management (BLM). The existing project is located on land managed by ADNR. The restoration of

the existing project would be consistent with the uses on the remainder of the natural areas to the south of the project.

Prime and Unique Farmlands. There are no designated prime or unique farmlands in Alaska. The State of Alaska has not designated Farmlands of Statewide Importance for Alaska. The project is not located within or near designated Farmlands of Local Importance.

Riparian Areas. The riparian areas adjacent to Rhoads Creek within the project area were altered during the construction of the current site. The proposed project would restore Rhoads Creek to its approximate original channel and re-establish riparian vegetation along the disturbed section.

Scenic Beauty The current project is an obviously constructed area in the middle of an otherwise natural setting. In addition to the constructed terrain, the lack of successful revegetation of the site and the severe erosion detract from the scenic beauty of the overall area. The proposed restoration project would help restore the scenic integrity of the current site.

Socioeconomics. Since the construction of the existing project, recreational use of the current site and surrounding area has increased substantially. The improvement of the Mile 1408 road has increased accessibility to the area. The dikes and the drill line are used as trails for All-Terrain Vehicle (ATV) traffic, and the cleared area around the infiltration basin is used extensively as a camping area, especially during hunting season The numerous old hide and gut piles in the project area indicate that hunting pressure in the area is both high and successful The proposed project would serve to reduce access to the area by returning the Mile 1408 Road back to it's original unimproved state and eliminate the large parking area that is the infiltration basin. The dikes and drill line would also be removed and the area restored, including placing large woody debris both as a deterrent to ATV traffic and to help dissipate overland flow.

Wetlands. Permafrost-driven black spruce wetlands are located near the proposed project. A USACE Section 404 permit (4-1999-0120) was obtained for the original construction project. As no work outside of the original project footprint or established agricultural fields (berm removal)) is planned at this time, no wetland impacts are anticipated as a result of the proposed project.

Wild and Scenic Rivers. There are no designated Wild and Scenic Rivers in the vicinity of the proposed project. The nearest designated river is the Delta River starting at approximately ½ mile south of Black Rapids.

Wildlife. The current infiltration basin is being used as a watering hole for wildlife in the project area during and for a short period following flow events NRCS personnel have observed moose and wolf tracks as well as other wildlife sign in and around the basin margins. The proposed project would remove the basin as a source of water, however Rhoads Creek itself would remain as a source of water during flow events Also,

restoring microtopography and capping the existing coarse materials with organic-rich topsoil will allow natural ponding to occur. The restoration of the site may also somewhat reduce the hunting pressure in the area (see Socioeconomics above).

The removal of berms from agricultural lands may also have adverse effects on local wildlife. These berms are frequently nesting and shelter areas for upland game birds such as spruce grouse (*Falcipennis canadensis*), ruffed grouse (*Bonasa umbellus*), and sharp-tailed grouse (*Tympanuchus phasianellus*) as well as numerous passerine species The berms also serve as wildlife corridors for other species. NRCS is conducting a Wildlife Habitat Evaluation for the proposed project, including berm removal, as part of the Environmental Assessment.

United States Department of Agriculture

NRCS

Natural Resources Conservation Service
800 West Evergreen Avenue, Suite 100
Palmer, AK 99645-6539

Delta Clearwater Agency Scoping Meeting
Delta Junction NRCS Office
Wed. Aug. 5, 2009

Agenda

10:00	
Welcome and Introductions	NRCS Assistant State Conservationist for Operations, Phil Naegele
History of Project Restoration Project Proposal Modeling, 100-year Flood	NRCS State Conservation Engineer, Brett Nelson
Briefings and Funding	Phil Naegele
Question and Answer Session	All
11:30	
Lunch Break	On Own
12:45	
Regroup in Parking Lot Depart for Site	NRCS Vehicles
1:00	
Site Visit	Brett Nelson
3:00	
Wrap-up in the Field Preview Time Frame	Phil Naegele
3:30	
Return to Office	Thank you for joining us

Engineering Contact: Brett Nelson (907) 761 7717
brett.nelson@ak.usda.gov

General Contact: Phil Naegele
phil.naegele@ak.usda.gov

Helping People Help the Land

An Equal Opportunity Provider and Employer

Delta-Clearwater Restoration Project
Agency Scoping Meeting Attendees

Delta Junction NRCS Office
August 5, 2009

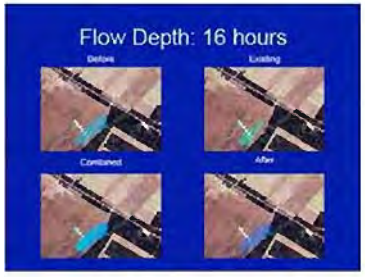
Last	First	Agency	Email	Phone
Becker	Steve	Stevens Village	environmental@stevensvillage-nsn.gov	907-687-6809
Corrigan	Michelle	ADEC	michelle.corrigan@alaska.gov	907-451-2140
Everett	Rod	NRCS	rodney.everett@ak.usda.gov	907-479-2657 x113
Leinberger	Dianna	ADNR DMLW	dianna.leinberger@alaska.gov	907-451-3014
Michaud	Mitch	NRCS	mitch.michaud@ak.usda.gov	907-283-8732
Molitor	Larry	SDSWCD		907-347-5684
Naegele	Phil	NRCS	phil.naegele@ak.usda.gov	907-761-7758
Nelson	Brett	NRCS	brett.nelson@ak.usda.gov	907-761-7717
Proulx	Dan	ADNR Div of Ag	dan.proulx@alaska.gov	907-374-3716
Trainor	Michele	Delta Wind	dhshusky@gmail.com	907-895-5115; 907-750-0284 (cell)
Voeller	Molly	NRCS	molly.voeller@ak.usda.gov	907-761-7700
Wood	Bill	NRCS	bill.wood@ak.usda.gov	907-761-7761
Wrigley	Bryce	SDSWCD	deltaswcd@wildak.net	907-895-6279


Delta Junction
100-Year Flood
Flow Depths
(Existing with Levees)
East Flow Point
Northing 3620089 Easting 1737569
Projection: State Plane Alaska Zone 3 FIPS 5003 Feet
Datum: NAD 1983


Flow Depth: 10 hours
Before
Existing
Combined
After

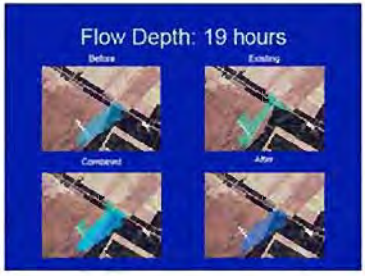

Flow Depth: 14 hours
Before
Existing
Combined
After

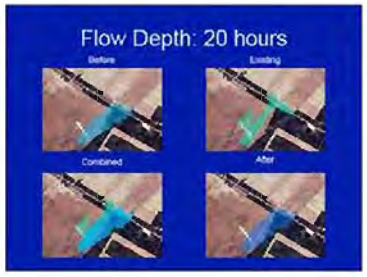

Flow Depth: 15 hours
Before
Existing
Combined
After

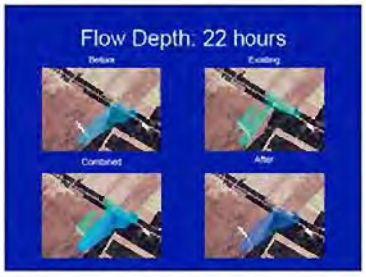

Flow Depth: 16 hours
Before
Existing
Combined
After

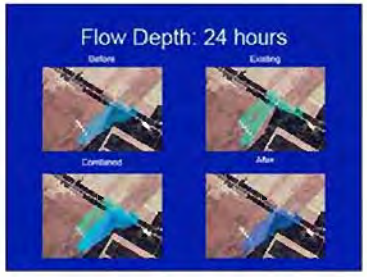

Flow Depth: 17 hours
Before
Existing
Combined
After


Flow Depth: 18 hours
Before
Existing
Combined
After


Flow Depth: 19 hours
Before
Existing
Combined
After

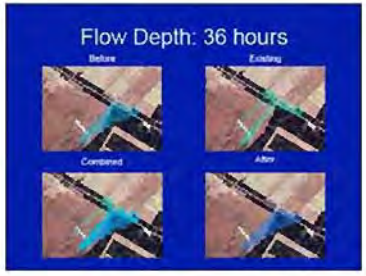

Flow Depth: 20 hours
Before
Existing
Combined
After

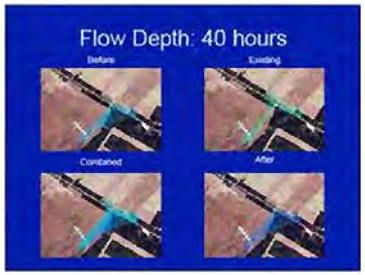

Flow Depth: 22 hours
Before
Existing
Combined
After

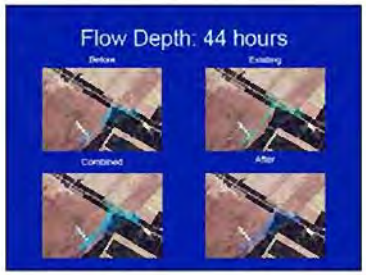

Flow Depth: 24 hours
Before
Existing
Combined
After


Flow Depth: 28 hours
Before
Existing
Combined
After

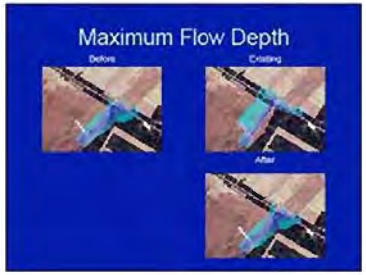

Flow Depth: 32 hours
Before
Existing
Combined
After


Flow Depth: 36 hours
Before
Existing
Combined
After

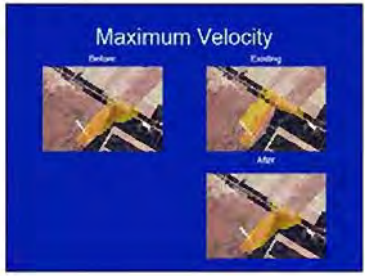

Flow Depth: 40 hours
Before
Existing
Combined
After


Flow Depth: 44 hours
Before
Existing
Combined
After


Flow Depth: 48 hours
Before
Existing
Combined
After


Maximum Flow Depth
Before
Existing
After

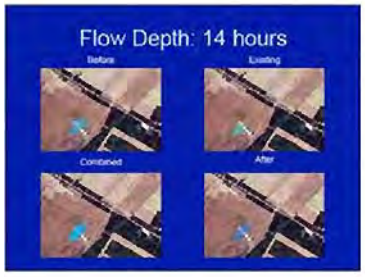
3

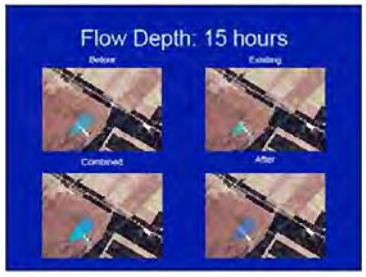

Maximum Velocity
Before
Existing
After

4


Delta Junction
100-Year Flood
Flow Depths
(Existing with levees)
West Flow Point
Northing 3622213 Easting 1735757
Projection: State Plane Alaska Zone 3, FIPS 5003 Feet
Datum: NAD 1983

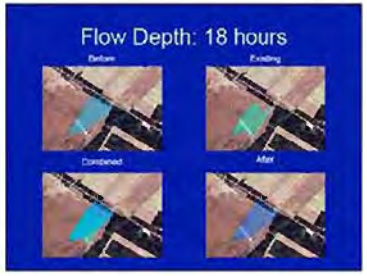

Flow Depth: 10 hours
Before
Existing
Combined
After

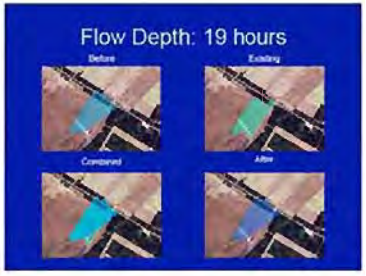

Flow Depth: 14 hours
Before
Existing
Combined
After

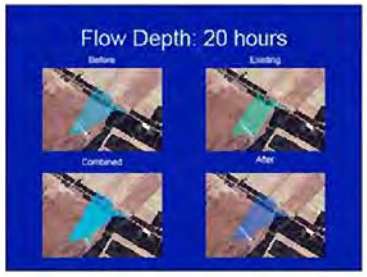

Flow Depth: 15 hours
Before
Existing
Combined
After

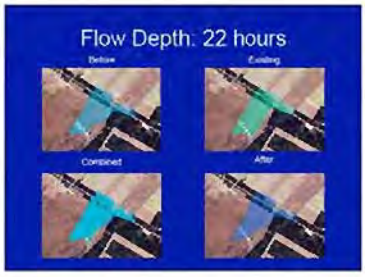

Flow Depth: 16 hours
Before
Existing
Combined
After

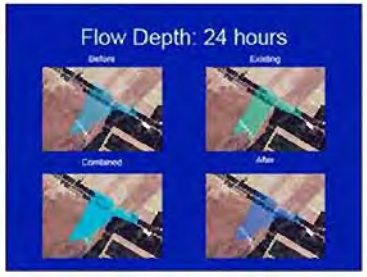

Flow Depth: 17 hours
Before
Existing
Combined
After


Flow Depth: 18 hours
Before
Existing
Combined
After

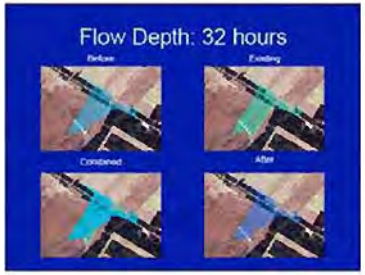

Flow Depth: 19 hours
Before
Existing
Combined
After


Flow Depth: 20 hours
Before
Existing
Combined
After

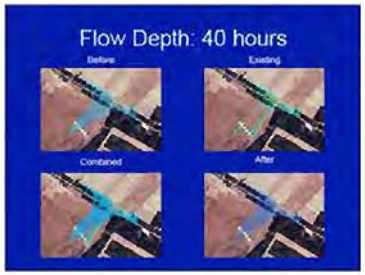

Flow Depth: 22 hours
Before
Existing
Combined
After


Flow Depth: 24 hours
Before
Existing
Combined
After


Flow Depth: 28 hours
Before
Existing
Combined
After

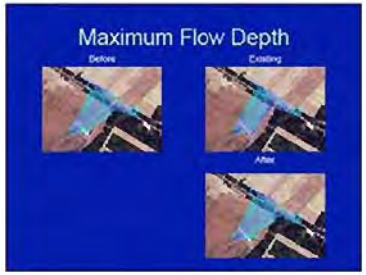

Flow Depth: 32 hours
Before
Existing
Combined
After


Flow Depth: 36 hours
Before
Existing
Combined
After

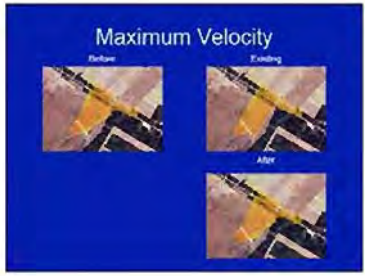

Flow Depth: 40 hours
Before
Existing
Combined
After


Flow Depth: 44 hours
Before
Existing
Combined
After


Flow Depth: 48 hours
Before
Existing
Combined
After


Maximum Flow Depth
Before
Existing
After

3


Maximum Velocity
Before
Existing
After

4

Delta Clearwater Agency Scoping Meeting
Delta Junction NRCS Office
Wed. Aug. 5, 2009

Meeting Notes

Phil Naegele, NRCS Assistant State Conservationist for Operations, welcomed the group. List of attendees is attached.

Brett Nelson, NRCS State Conservation Engineer provided project history and overview including Granite mountain flooding, the importance of the Clearwater River to Coho salmon, flooding of the 1980s. The project sponsors were listed and important dates of the project stated as follows: 1998 construction started. 2001 NRCS requested a formal engineering investigation. 2003 to 2008 options reviewed.

The three basic options for the project as it stands now were previewed:
1) 7-mile dam constructed. it would be twenty-feet high. Cost of $50 million.
2) Site stabilized· this would require continued maintenance and could see worse erosion than pre-project.
3) Site Restoration. this would bring the site back to pre–construction conditions.

Option 3 was discussed: reviewed map of water flow; described training dikes and levee (road); depicted where fill would be removed (levee, training dikes, and spoil piles) and where fill would be needed (basin and side inlets)

Discussed long-term stability: how vegetation material from berm rows could be used to re-vegetate the surface.

Channel re-created with levee removed as it was pre-project.

Steve Becker, Contract NEPA Specialist, explained the ephemeral nature of Rhoads Creek channel at the project site. He said water does not flow continuously in the channel. Flow events are widely separated chronologically and only occur during heavy rain or unusual spring break-up. Rhoads Creek channel could be used as access to the area for recreational purposes as it was pre-project.

Flow events were pictorially shown through computer modeling

Phil Naegele provided overview of funding and special topics. Not NRCS, nor partners, have funding for any part of the project at this time. Recovery / Stimulus funding (ARRA) could be a great funding opportunity to move this project forward. Preparation for ARRA funding possibilities is the reason for the tight timelines— the project must be shovel ready to compete for the funding.

Public Meeting concerns of issues of access and easements were briefly touched on. (A public meeting was held over a year ago.)

Steve Becker previewed the time-line for NEPA. A draft EA should be out by September 15, 2009. An agency meeting and public meeting will be held in Delta Junction to review the proposal and Draft EA. The meeting will be advertised in Fairbanks, Anchorage, and local papers. The final EA will be produced following comments. NEPA documents are planned to be completed by December 31, 2009.

Open Discussion and Questions Notes
(Comments and questions noted by agency, not person)

District (Delta Junction Soil and Water Conservation District) had contacted DNR about limiting vehicular access (not 4-wheelers) They were told it could take over a year for DNR to adjudicate the easement.

DNR (the spokesperson is relatively new to this project and is replacing retiring employee Robert Layne) said DNR can limit use but politically it is difficult to limit use. The State public process must be followed. DNR asked if access to the area is available elsewhere.

NRCS responded access is plentiful through other routes.

District reported seeing the landscape torn-up. a suburban driving 2 miles beyond project and trucks tearing up the area Highway vehicles were reported to often be on the property.

DNR responded that it is possible for DNR to set permits or regulations for the area.

Contractor mentioned short-term access would need to be controlled during on-site work and possibly longer term.

NRCS reiterated land ownership rights: The State is landowner and has control of access. NRCS's primary concern is restoration of the hydraulic and sediment processes at the project site and those effects away from the project site that are caused by the existing work.

DNR stated that alternate access with compliance is best and DNR does not have enforcement ability.

District commented on the concern for highway vehicles causing erosion, not 4-wheelers.

DNR explained that access is not the same as a recreation "hang out" location.

NRCS stated that motorized traffic has an impact on the existing project site.

District asked about leveling versus channeling and NRCS explained water flow, low flow, and the DOT culvert system. Because a better explanation to this question could be given on-site, the group broke for lunch and planned to reconvene after lunch for the site visit.

Site Visit Notes
(Comments and questions noted by agency, not person)

Caravan to site. Upon arrival on-site, the agency group saw a very large RV with trailer camping at the infiltration basin and a family in an SUV driving further into the site area.

Drill line
NRCS explained how and why the drill line was erected. DNR asked if it is used for access. NRCS said yes, due to the project installing the drill line, now ATV's use it as an access trail. Restoration would need to involve vegetating the line with woody species such as trees and brush, not just grass. DNR thought public would push back against not being able to use the now established trail and asked if an agreement could be made with a trail left and still restore the rest of the project. NRCS reminded the group the State is the landowner and that the State would need to take full responsibility of the land and any trail left.

DEC commented that all the partners would have to agree on the process. DNR said options would need to be weighed: benefits of access versus risks of leaving the trail in place not just trail users but all residents rights need to be considered. Impacts to private property owners' must also be considered. NRCS interjected a reminder about the Coho salmon habitat that is at risk due to increased erosion due to the existing project works. NRCS would need to look at the proposal and review with all the State Agencies, then hold public meetings, before a preliminary decision could take place. NRCS asked about the time frame for State action. DNR explained is would depend on the complication of the project and easements and reiterated that access is a "hot button" issue. This project needs an easement to deconstruct, which is not the normal situation for the State, per DNR.

Spoil Pile
The group viewed excess material (in spoil piles) from the settlement basin excavation. The spoil pile has no water holding capacity and if fine soils are at the bottom of the pile, NRCS would like to use it on top of the settlement basin if/when the basin is refilled as part of the restoration effort.

Overflow Notches
Currently, a one-year storm event more than fills the basin and the basin has no appreciable routing effect, even on small flow events. Two emergency spillways were cut after the original basin was formed. Together, the spillways cannot quite hold a 100-year flow event. NRCS explained 100-year event means any year has a one percent chance of flooding to that degree. Alaska has only twenty years of rain records, so Alaska statistics are not particularly reliable when predicting frequency of large flood events

"Natural" channel of Rhoads Creek (on 1408 Road just above project area)
This channel was created by erosion processes when water started flowing down the 1408 Road cleared by the military in the 1940's.

This type of channel is what existed all the way down to the Alaska Highway prior to construction starting on the watershed project. NRCS's restoration concept would propose to recreate this channel approximately as it was prior to construction commencement back in 1998.

DEC asked if NRCS was thinking of planting and cabling-in willows. NRCS said lots of revegetation efforts would be necessary and vegetation was of utmost importance in the reconstruction. Whether or not reveg is accomplished through natural reveg processes or planting has not yet been decided but likely some of each process would be used. There are no plans for cabling-in revetments like is commonly used as a bioengineering bank treatment on perennial streams.

Side Inlet 1
The headcut is moving up-stream and erosion is stretching further into the watershed. The group briefly discussed how data was missing when project was started, and thus mistakes followed.

DNR asked if the whole reason to do this project is to keep the silt out of the Clearwater Bog and Clearwater River. NRCS explained, eventually the erosion on the project site will begin to naturally stabilize but we do not know how much worse it could get before naturally stable conditions are reached. This natural stabilization could take a long time (even 100 years or more given ephemeral nature of system). The erosion occurring in and along side inlet 1 shows what can occur in only six years (2003-2009) with no major flow events. (There have been no events greater than a 10 year event or 24 hour event).

Training Dikes
NRCS explained that the training dikes were to direct water into the side inlets. It was thought that training dikes would be a less erosive manner of getting flood waters into the infiltration basin. From 2003 until 2005, significant erosion took place along Training Dike 2. In 2005 NRCS reshaped the dike to eliminate safety risks due to vertical erosion scars. Now, summer of 2009, the training dike is cut again and in bad condition from erosion.

Untouched Area between Side Inlet 1 and Side Inlet 2
The area provided an example of what the whole site would look like after restoration: good brush cover, moss mat, downed trees and growing trees.

Side Inlet 2
Minor flows causing erosion are seen at Side Inlet 2. NRCS described how, through the proposed project, side inlets would be filled level to slightly higher than level to encourage flows into the natural, untouched areas between side inlets. This will help give the restored areas of the side inlets time to heal without as much potential damage from small flow events. The overfilling would be relatively minor. During major flow events the flow needs to cover the entire landscape to minimize potential erosion. NRCS does not want to artificially concentrate flow in any manner, including by substantial overfilling of the side inlets to protect them during the reveg process. DNR asked if there was enough fill on site to accomplish all the refilling. NRCS explained no soil was moved off-site during construction and it was NRCS' opinion there was adequate fill on site to accomplish the restoration. Berms from local farm fields could also be used for to establish a better growing medium at the surface and provide additional fill

material. If additional fill materials were needed, NRCS proposed obtaining them from other sources away from the project site. There are six side inlets.

Long Levee, River Rock
NRCS continued explanation of channel re-creation and necessary corridor re-vegetation.

DOT Splitting Channel
DOT settlement basin viewed. (No one attended the meeting from DOT.)

Questions and Answers on Site
Contractor requested Agency Meeting comments provided to NRCS by Aug 19, 2009. NRCS said they would comments and input. The contractor will compile the comments for NRCS. All comments will be addressed in the Draft EA. Meeting attendees agreed that open lines of communication are pertinent

Contractor said he would compile contact information from the meeting and requested other contacts be sent to him if others wanted to be added to the contact list.

Agency Review Meeting and Public Meeting will take place in late September. First the Public Meeting will take place and then the Agency Meeting.

End of site visit and meeting.

Meeting Notes with ADF&G and NRCS September 2, 2009

Persons present.

Steve DeBois Area Wildlife Biologist and Bison Range Manager, ADF&G
Fronty Parker, Upper Tanana Area Management Biologist, ADF&G
Robert (Mac) McLean, Regional Supervisor, ADF&G
Brett Nelson, State Conservation Engineer NRCS
Phil Naegele, Assistant State Conservationist, NRCS

Meeting Duration: 2 hours

An update on the status of the watershed was provided by NRCS. It was explained that the urgency of meeting the quick timelines revolves around the opportunity to receive funding from the ARRA and the requirements that the project is designed and constructed in the summer of 2010. It was explained that this may be the only opportunity in the foreseeable future to "fix" this site. NRCS explained that the site "as-is" is in a worse condition for the Clearwater fisheries then if the project had never begun. The idea of site restoration is to put the site back to pre-construction condition. Brett Nelson gave an overview of the proposed design of the project and solicited ADF&G input. Discussions centered on the 1408 berm and the concentrated flow that occurs directly to the Alaska Highway and the filling of the basin and training dikes. Water flow models were passed around to show how flow will be able to flow in a natural NE direction after the removal of the 1408 berm. Easements for North of the Alaska Highway were also discussed it was explained that this would need to be pursued as part of a watershed effort but not part of the watershed project since it was most likely that easements would be obtained by attrition and AK DNR presently is not receptive to easements.

Issues brought up by ADF&G include:

- Questioned the development of a channel/access that is incised even though that was what was present prior to construction
- Asked about the Spread of Noxious and invasive weeds when using berm material from the Delta Ag area.
- Brought up the need for a parking area for public at the present location of the site
- Alternatives to filling the basin or other actions to solve or lessen the problem
- The need for a good public relations and education campaign as it is anticipated that recreational users will complain to the local ADF&G office about the project. This would include media releases in the Delta, Fairbanks, and Anchorage media.
- Questions were brought up about the benefit of restoration versus leaving the site "as-is"

After discussions on the issues a summarized list of items were reviewed as consensus:

- The 1408 channel/access should not be re-created/incised but simply level with existing natural ground to maximize sheet flow rather than concentrated flow
- The bison range would not be considered as a source of woody material since the state does not have funds to mange additional acreages
- The basin would need to be filled but a parking area would be provided for recreational users, this area would be designed to be un-obstructive to water flow and possibly armored to help keep it stable during flows.
- The 1408 levee would be removed
- A good Public Relations campaign would be done to educate the public on protecting the Clearwater River System


Delta Wind

Got Berms?

United States Department of Agriculture

NRCS

Natural Resources Conservation Service
800 West Evergreen Avenue, Suite 100
Palmer, AK 99645
907-761-7760 907-761-7790 FAX
www.ak.nrcs.usda.gov

<<FirstName>> <<LastName>>, <<Position>>
<<Division>>
<<Department>>
<<Address>>
<<City>>, <<State>> <<Zip>>

SEP 0 8 2009

Dear <<Title>> <<LastName>>:

On August 5, 2009, the U.S. Department of Agriculture Natural Resources Conservation Service (NRCS) conducted an agency scoping meeting regarding restoration of the Rhoads Creek and Granite Creek sub-watersheds of the Delta-Clearwater River. The project would remove the watershed control measures previously installed by NRCS and restore the site to as close to pre-project conditions as practicable. NRCS is preparing an Environmental Assessment (EA) for the proposed project in accordance with the National Environmental Policy Act (NEPA) and implementing regulations.

Enclosed please find a copy of the meeting notes for the August 5th agency scoping meeting. Our thanks go to those agencies able to attend, and hope that those who were unable to attend or to send a representative will continue to participate in project development and the NEPA process. The draft EA will be available for agency and public review on or around September 15, 2009. You will be notified of its availability and the URL for downloading the document in a separate letter.

If you have any questions regarding the proposed project, please contact Mr. Phil Naegele, Assistant State Conservationist - Operations at: (907) 761-7760 or via email at *phil.naegele@ak.usda.gov*. You can direct any technical questions to Mr. Brett Nelson, State Conservation Engineer, at (907) 761-7760 or via email at: *brett.nelson@ak.usda.gov*.

Sincerely,

Robert N. Jones

ROBERT N. JONES
State Conservationist

Enclosure: Agency Scoping Attachment

cc: Phil Naegele, Assistant State Conservationist, NRCS
Brett Nelson, State Conservation Engineer, NRCS
Catherine Hadley, District Conservationist, Delta Field Office, NRCS
Rodney Everett, Reality Specialist, Fairbanks Field Office, NRCS
Steve Becker, CEP, Environmental Manager, Stevens Village Council

Helping People Help the Land

An Equal Opportunity Provider and Employer

Larry Bright, Branch Chief
Environmental Review
U.S. Fish and Wildlife Service
101 12th Avenue, Room 110
Fairbanks, AK 99701

Irene Catalone, Local Government Specialist
Division of Community Advocacy
State of Alaska DCCED
211 Cushman Street
Fairbanks, AK 99701-2744

Marcia Combes, Director
Alaska Operations Office
U.S. Environmental Protection Agency
222 W. 7th Avenue, #19
Anchorage, AK 99513

Torsten Ernst, Environmental Specialist
Division of Spill Prevention and Response
State of Alaska DEC
610 University Avenue
Fairbanks, AK 99709

Shelly Jacobson, Field Manager
Central Yukon Field Office
U.S. Bureau of Land Management
1150 University Avenue
Fairbanks, AK 99709

Christy Everett, Manager
Fairbanks Regulatory Field Office
U.S. Army Corps of Engineers
2175 University Avenue, Suite 201E
Fairbanks, AK 99709-4910

Robert McLean, Manager
Habitat Division
State of Alaska DF&G
1300 College Road
Fairbanks, AK 99701

Chris Milles, Northern Region Manager
Division of Mining, Land and Water
State of Alaska DNR
3700 Airport Way
Fairbanks, AK 99709

Lawrence Peltz, Habitat Conservation Specialist
National Marine Fisheries Service
P.O. Box 43
Anchorage, AK 99513

Lynn Kent, Director
Division of Water
State of Alaska DEC
P.O. Box 111800
Juneau, AK 99811-1800

Follow-up letter Mail Merge List Page 1

Charles Knight, Northern Region Manager
Division of Agriculture
State of Alaska DNR
1648 S. Cushman Street, Suite 201
Fairbanks, AK 99701

Howard Thies, Maintenance & Operations Director
Northern Region
State of Alaska DOT&PF
2301 Peger Road
Fairbanks, AK 99709-5316

Rex Wrigley, Chair
Salcha-Delta SWCD
P.O. Box 547
Delta Junction, AK 99737

Mike Tvenge, Administrator
City of Delta Junction
P.O. Box 229
Delta Junction, AK 99737

Fronty Parker, Fisheries Biologist
Sport Fish Division
State of Alaska DF&G
P.O. Box 605
Delta Junction, AK 99737

Steve DuBois, Wildlife Biologist
Wildlife Conservation Division
State of Alaska DF&G
P.O. Box 605
Delta Junction, AK 99737

Michelle Corrigan, Environmental Specialist
Division of Water
State of Alaska DEC
610University Avenue
Fairbanks, AK 99709

Dianna Leinberger,
Division of Mining, Land and Water
State of Alaska DNR
3700 Airport Way
Fairbanks, AK 99709

Dan Proulx, Division of Agriculture
State of Alaska DNR
3700 Airport Way
Fairbanks, AK 99709

Identical Letters
Sent Dan Proulx

Follow-up Letter Mail Merge Page 2