3.4 Water Quality

Existing Conditions

The lower 10 miles of Campbell Creek has been identified by the ADEC as a Tier II Section 303(d)-listed water-quality-limited water body for fecal coliform due to urban runoff. Tier II-listed water bodies have had assessments completed and now require Total Maximum Daily Load (TMDL) or water body recovery plans. Campbell Creek has been on the Section 303(d) list for fecal coliform since 1990 (ADEC 2004).

ADEC's draft Alaska's 2004/2006 Integrated Water Quality Monitoring and Assessment Report indicates that Campbell Creek is water quality limited by fecal coliform (ADEC 2006). As a result, a fecal coliform TMDL was developed by ADEC and it received EPA approval in June 2006.

The Assessment Report concluded that water quality problems in the Campbell Creek Drainage Basin are driven by non-point sources, and thus the most significant violations occur during storm runoff events. Two critical runoff periods are during winter melt, March and April, and during the midsummer rainfall. The resident time of water in Campbell Creek is short, and therefore pollutants do not have time to chemically react in-stream.

The remaining water bodies in the project area are not listed on ADEC's Section 303(d) list of impaired water bodies. Tina Lake is surrounded by industrial areas and likely has low quality water input. Water sampling indicates petroleum hydrocarbons are found in Tina Lake (see Section 3.19 Contaminated Sites for more details).

What is the Clean Water Act?
The Clean Water Act provides for comprehensive federal regulation of all sources of water pollution. It prohibits the discharge of pollutants from non-permitted sources. In Alaska, the authority to administer the Clean Water Act is delegated to the US Army Corps of Engineers and the Department of Environmental Conservation.

Waters designated under Section 303(d) are "water quality limited" surface waters. The listing is revised every two years. In Alaska, these water bodies are priority ranked based on the severity of the pollution, the feasibility of implementing a water body recovery plan, and other factors.

Environmental Consequences

In the No Action Alternative, there would be no changes to the water quality in the study area. There is a potential for water quality degradation in Tina Lake. The lake is not highly visible and is surrounded by industrial uses. In recent high

snowfall years, a snowdump has been observed encroaching into Tina Lake. Intermixed deleterious material such as trash, road sand, silt, petroleum products, and glycol has the potential to degrade the water quality. Runoff from the surrounding area enters the water system untreated.

The Proposed Action would have minor impacts on water quality. Six thousand linear feet of new four-lane roadway and 2,700 linear feet of two-lane roadway expansion would be converted to impervious surface from the existing drainage basin. The new roadway surface area is approximately 17 acres or 5 percent of the total watershed drainage basin area of 350 acres. The Proposed Action may cause decreases in water quality due to the addition of particulate matter, oil, petroleum and other contaminates from the roadway and associated stormwater runoff. The proposed stormwater treatment system would mitigate long-term water quality impacts. Stormwater runoff would be entering Campbell Creek and Tina Lake.

In the Proposed Action, water quality in Tina Lake is expected to remain the same or improve. The increased visibility of the lake from the roadway would reduce the potential for dumping materials into the lake.

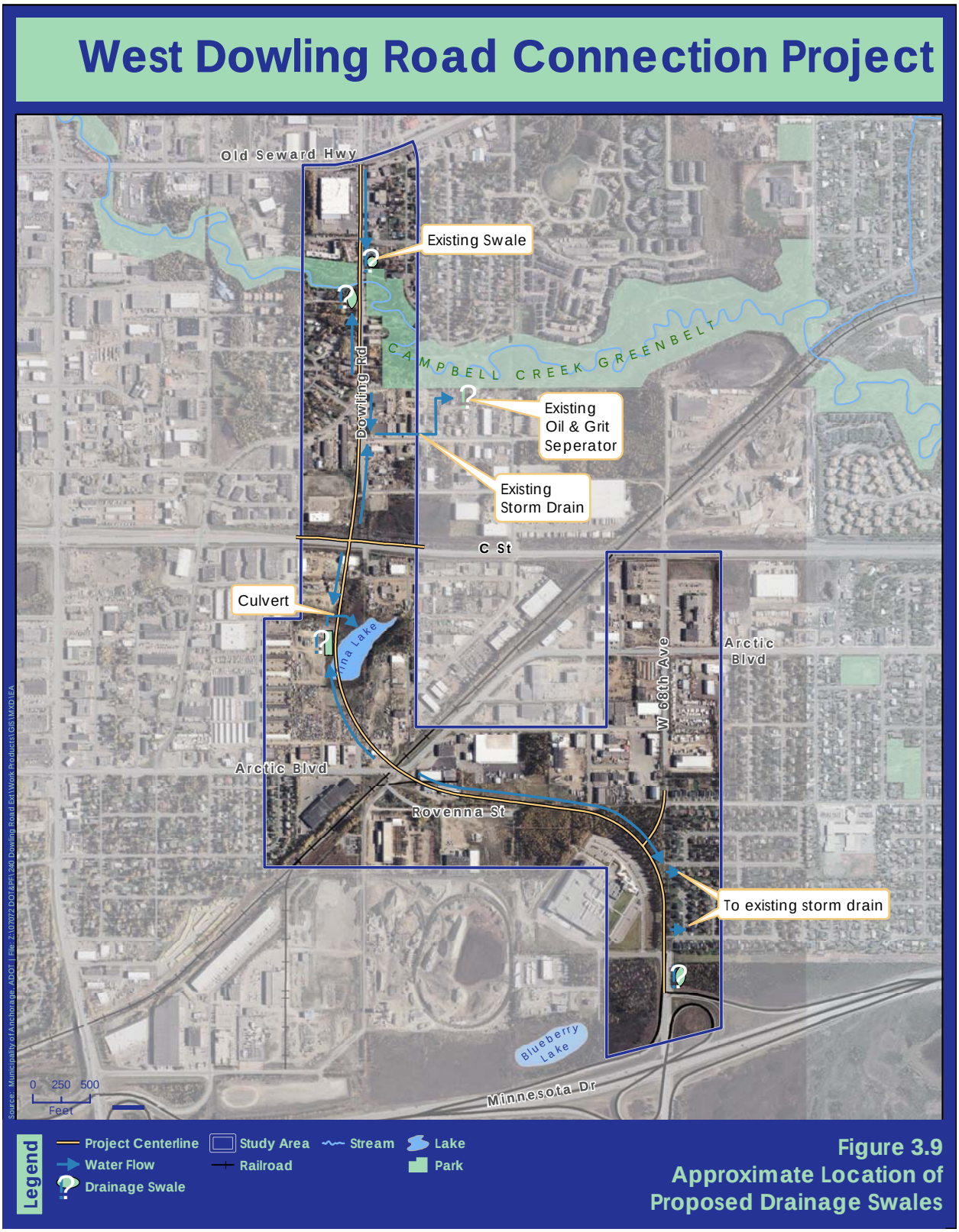
For more information on stormwater drainage, see Appendix D

Stormwater runoff from the roadway would be collected via a system of curbing, structures, piping and ditches prior to treatment and outfall into Campbell Creek **through the existing storm drain system (see Figure 3.9)**. Drainage for the Proposed Action would be directed to various outfalls from five corresponding contributing areas.

The Proposed Action has been designed to avoid and minimize impacts to water quality. These measures are described below.

Minnesota Drive to Arctic Boulevard

Runoff would be collected from the roadway surface and southern ROW and directed to the existing storm drainage pipe system along 68th


West Dowling Road Connection Project
Old Seward Hwy
Existing Swale
CAMPBELL CREEK GREENBELT
Dowling Rd
Existing
Oil & Grit
Seperator
Existing
Storm Drain
C St
Culvert
Arctic
Blvd
W 68th Ave
Arctic Blvd
Rovenna St
To existing storm drain
Blueberry
Lake
Minnesota Dr
0 250 500
Feet
Legend
Project Centerline
Water Flow
Drainage Swale
Study Area
Railroad
Stream
Lake
Park
Figure 3.9
Approximate Location of
Proposed Drainage Swales

Avenue. A biofiltration swale would be constructed and utilized to pre-treat the runoff prior to entering the existing storm drain system. Additional treatment is provided downstream prior to entering Campbell Creek by the existing sedimentation basin located near the intersection of Minnesota Drive and Dimond Boulevard. The north side embankment and ROW would be directed through a biofiltration swale prior to discharge into the wetlands surrounding Blueberry Lake. ~~.~~With this proposed treatment, no water quality impacts are anticipated.

Arctic Boulevard to C Street

In this segment, stormwater would be directed to Tina Lake and the surrounding wetlands. The USACE indicated during consultation that the wetlands would benefit from more water and as much runoff as possible should be retained for this purpose. The proposed roadway storm drain would outfall to a biofiltration swale on the north side of the embankment near Tina Lake, then passed east to the existing wetlands before transiting southward through the embankment via culverts to the lake. **The proposed biofiltration swale would be sized so that water is treated prior to entering Tina Lake.**

Improvements to the stand pipe in Tina Lake would also cause improvements in water quality. The improvements result in water being held in Tina Lake longer. The additional time would allow the suspended materials to settle and the wetlands to filter the water before the water enters the storm drain system.

Tina Lake presently outfalls into a storm drain system along 59th Avenue. Water from this system is treated by the sedimentation basin located near the intersection of Minnesota Drive and Dimond Boulevard. As proposed, water quality is expected to improve as the result of the Proposed Action.

C Street to Cordova Street

The storm drain system ~~along the proposed roadway~~ would direct flow ~~from C Street~~ south **along 2nd** ~~to~~ A Street and into an existing **storm drain** ~~flowing~~ **through an existing** oil and grit separator **located** ~~at the~~ east of A **S**~~s~~treet **L**~~l~~oop at the outfall to Campbell Creek.

Cordova Street to Campbell Creek

Stormwater in the section from Campbell Creek to Cordova Street (approximately 1,400 feet) would be directed **west to the A Street storm drain and an existing oil and grit separator.** ~~east to Campbell Creek. A biofiltration treatment swale would be constructed adjacent to Campbell Creek on the north side of Dowling Road. The swale design would account for the possible addition of runoff from adjacent properties to the north.~~ As proposed, no reduction in water quality is anticipated.

Campbell Creek to Old Seward Highway

The section of Dowling Road from the Old Seward Highway to Campbell Creek Street (approximately 1,000 feet) presently drains via storm drain to a biofiltration swale on the south side of Dowling Road. This swale drains to Campbell Creek. The storm drain structural components would be slightly modified to adjust to the new roadway grades and width. The swale will be analyzed for capacity with the proposed roadway expansion and adjusted as required. These modifications are not expected to have a negative impact on water quality.

Construction

Short-term impacts to water quality are expected due to construction activities. Construction may require excavation of some soils and replacement with imported granular fill materials. **Proper use of BMPs will minimize construction related impacts to water quality.** This **will also prevent an** ~~may temporarily~~ increase **in** sedimentation within Tina Lake and Campbell Creek. **BMPs that**

may be used to protect water quality in Tina Lake include winter construction, dewatering the lake or the use of floating boom supported silt fence. The project involves approximately 28 acres of ground-disturbing activities.

Excavation dewatering may be performed during construction activities which could require an ADEC General Wastewater Disposal Permit for excavation dewatering. Appropriate BMPs would be implemented to prevent scour erosion and sediment transport and to protect surface water quality during dewatering. BMPs such as using a sedimentation basin or a sediment trap would be implemented.

Water quality impacts resulting from erosion and sedimentation would be controlled in accordance with established BMPs. BMPs would include such measures as installing temporary erosion control measures such as wood excelsior mats, straw bales, and/or silt fencing until vegetation can bind the soil or diversion dikes divert stormwater away from the disturbed soils, as appropriate.

Construction impacts to water quality associated with the removal of the bridge are not anticipated.

Mitigation and Authorizations

The project includes designing drainage facilities to avoid and minimize pollution of water sources by storm or snowmelt runoff. The project's drainage design would incorporate measures to detain water on-site or in other designated areas and to avoid direct routing of untreated stormwater directly to creeks or existing storm drain systems. Snowmelt from the adjacent grandfathered snow dump would be directed into a drainage swale for clean-up prior to entering Tina Lake.

The runoff would be treated by appropriate management practices to minimize the roadway's adverse impacts on water quality and surface water flows.

For work within waters of the United States, DOT&PF would obtain a Section 404 permit from the USACE.

The designer would be required to prepare an erosion and sediment control plan. Minimizing erosion would decrease the amount of sediment entering the water system.

A Stormwater Pollution Prevention Plan (SWPPP) would be prepared by the construction contractor and implemented to obtain coverage under the NPDES General Permit for Stormwater Discharges from Construction Activities. (Note: the State of Alaska will likely assume responsibility for this program before this project is constructed. If so, then the project would be constructed in accordance with the requirements of the Alaska PDES program.) No **substantial** ~~significant~~ impacts to water quality are expected to result from construction activities. An ADEC Section 401 Water Quality Certification (Certificate of Reasonable Assurance) would be required for the project, and DOT&PF and its contractors would abide by stipulations included in that certification.

Excavation dewatering may be performed during construction activities which could require an ADEC General Wastewater Disposal Permit

Groundwater would be protected with the use of standard BMPs. A Hazardous Materials Control Plan would be prepared and implemented. **If applicable during construction, a spill prevention control and countermeasure (SPCC) plan would be developed and implemented.**

Other construction-related BMPs that would be implemented:

- Limiting clearing and grubbing outside of the fill footprint to the extent practicable to control physical disturbance of wetlands and habitats.
- Installing silt fences or other sediment control measures adjacent to waterways just beyond the estimated toe of fill to capture sediment contained in runoff

- Locating all staging, fueling, and equipment-servicing operations at least 100 feet away from all streams and wetlands
- Having spill response equipment readily available and ensuring that construction personnel are trained in spill response to contain accidental leaks of oil or fuel from construction equipment
- Disturbed areas would be re-contoured to approximate original conditions and reseeded with native vegetation to minimize erosion and stabilize stream banks within 14 days after the cessation of work on these areas. If this occurs after the growing season, then the areas will be temporarily stabilized with some other erosion control BMP's until permanent seeding can be accomplished in the next growing season.~~.~~