

Conserving Salmon Habitat in the Mat-Su Basin



Executive Summary The Strategic Action Plan of the Mat-Su Basin Salmon Habitat Partnership 2013 Update



Mat-Su Basin Salmon Habitat Partnership Steering Committee

Frankie Barker
Matanuska-Susitna Borough

Eric Rothwell
NOAA's National Marine Fisheries Service

Roger Harding
Alaska Department of Fish and Game

Corinne Smith
The Nature Conservancy

Bill Rice
U.S. Fish and Wildlife Service

Kim Sollien
Great Land Trust

Jessica Winnestaffer
Chickaloon Village Traditional Council

Jeff Davis
Aquatic Restoration and Research Institute

Laura Allen
Upper Susitna Soil & Water Conservation District

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2008 Editors Corinne Smith, The Nature Conservancy
 Jeff Anderson, U.S. Fish and Wildlife Service

2013 Editors Corinne Smith and Jessica Speed, The Nature Conservancy

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Table of Contents

I. Executive Summary	4
II. Introduction.....	16
<i>Mat-Su Basin Salmon Habitat Partnership</i>	<i>16</i>
<i>2013 Updated Plan</i>	<i>18</i>
<i>The Intent of this Strategic Action Plan.....</i>	<i>19</i>
<i>Mat-Su Basin Landscape and Species</i>	<i>20</i>
<i>People in the Mat-Su Basin</i>	<i>23</i>
III. Overview of Planning Process.....	26
<i>The Planning Team 2008.....</i>	<i>28</i>
<i>2013 Update to the Strategic Action Plan</i>	<i>29</i>
IV. Organizational Goals.....	30
<i>Organizing and Operating Principles</i>	<i>30</i>
<i>Governance.....</i>	<i>30</i>
<i>Membership</i>	<i>34</i>
<i>Staff.....</i>	<i>35</i>
<i>Financial Management.....</i>	<i>36</i>
<i>Communications & Outreach.....</i>	<i>37</i>
V. Conservation Targets.....	39
<i>Sockeye salmon.....</i>	<i>40</i>
<i>Pink and chum salmon.....</i>	<i>41</i>
<i>Chinook and coho salmon.....</i>	<i>42</i>
<i>Upland Complex</i>	<i>44</i>
<i>Lowland Complex – West of the Susitna River</i>	<i>46</i>
<i>Lowland Complex – East of the Susitna River.....</i>	<i>47</i>
<i>Lake Complex</i>	<i>48</i>
<i>Upper Cook Inlet Marine.....</i>	<i>49</i>
VI. Viability Assessment.....	53
<i>Salmon Targets</i>	<i>53</i>
<i>Terrestrial System Targets.....</i>	<i>55</i>
<i>Marine System Target.....</i>	<i>61</i>
<i>Overall Health of Mat-Su Basin Salmon and Habitat</i>	<i>63</i>
VII. Potential Threats to Salmon & Their Habitats	65
<i>Aquatic Invasive Species.....</i>	<i>66</i>
<i>Climate Change</i>	<i>66</i>
<i>Development in Estuaries and Nearshore Habitats.....</i>	<i>69</i>
<i>Ground & Surface Water Withdrawals.....</i>	<i>69</i>
<i>Household Septic Systems & Wastewater.....</i>	<i>70</i>
<i>Large-scale Resource Development</i>	<i>70</i>
<i>Motorized Off-road Recreation</i>	<i>71</i>
<i>Residential, Commercial, and Industrial Development</i>	<i>72</i>
<i>Roads and Railroads.....</i>	<i>73</i>
<i>Stormwater Runoff.....</i>	<i>74</i>
VIII. Conservation Strategies	76
1. <i>Overarching Science Strategies</i>	<i>77</i>
2. <i>Alteration of Riparian Areas.....</i>	<i>81</i>

3. Climate Change	83
4. Culverts that Block Fish Passage	85
5. Filling of Wetlands.....	88
6. Impervious Surfaces and Stormwater Pollution	90
7. Aquatic Invasive Species.....	93
8. Large-scale Resource Development	96
9. Loss or Alteration of Water Flow or Volume.....	98
10. Loss of Estuaries and Nearshore Habitats	101
11. Motorized Off-road Recreation	105
12. Wastewater Management.....	107
IX. Measures of Conservation Success	110
X. The Future for the Mat-Su Salmon Partnership.....	115
Glossary of Terms and Acronyms.....	116
References and Cited Literature	126

Appendices

1. *Participants in Planning Process*
2. *Strategic Action Planning Workshops*
3. *Other Planning Documents with Provisions for Fish Habitat in the Mat-Su Basin*
4. *Nested Targets*
5. *Viability of Salmon and Their Habitat*
6. *Stresses to Salmon and Their Habitat*
7. *Threats to Salmon and Their Habitat*
8. *Research Needs for Mat-Su Basin Salmon and Their Habitat*
9. *Steps in Conservation Action Planning*
10. *Summary and Response to Comments Strategic Action Plan of the Mat-Su Salmon Partnership*
11. *Diagram of Sources-Stresses-Targets from 2013 Planning Workshops*
12. *Monitoring of Partnership Projects*
13. *Partnership Coordinator Position Description*

I. Executive Summary

Chinook, Coho, sockeye, pink, and chum salmon all return in great numbers to the streams and lakes of the Matanuska-Susitna (Mat-Su) Basin each summer to spawn. The Susitna River run of Chinook salmon is the fourth largest in the state. Yet rapid growth and urbanization in the Mat-Su Basin is threatening the fish habitat necessary to sustain healthy salmon populations and ultimately the quality of life for residents. Across the Mat-Su Basin, residents value healthy fish and wildlife populations, open space, clean air and water, recreational opportunities, and a rural lifestyle. For many, salmon are an integral part of their heritage and culture, and fishing is a regular part of life and an important means of caring for their families. The current pace of population growth in the region, combined with the current regulatory framework, enforcement, and common development and recreation practices, have many people concerned that these life-quality values cannot be maintained. The greatest risk to habitat for salmon and other freshwater fish in the Mat-Su Basin may be many small actions that compound over time to degrade riparian habitat, block fish passage, and impact water quality, quantity and flow.

Mat-Su Basin Salmon Habitat Partnership

The Matanuska-Susitna Basin Salmon Habitat Partnership formed to address increasing impacts on salmon habitat from human use and development in the Mat-Su Basin with a collaborative, cooperative, and non-regulatory approach that would bring together diverse stakeholders. Rapid population growth and the accompanying pressures for development will increasingly challenge the ability of stakeholders to balance fish habitat conservation with these changes over time. Water quality, water quantity, and other fish habitat-related conditions are among some of the more important issues that will have to be addressed to maintain the fish habitat required to sustain fish productivity. *From the beginning, the Partnership has acted with the belief that thriving fish, healthy habitats, and vital communities can co-exist in the Mat-Su Basin.*

There has been a history of fish habitat conservation efforts in the Mat-Su Basin, including upgrading traditional culverts to improve fish passage and maintain natural stream processes, stream restoration, and stream bank stabilization. Many of these were cooperative efforts between government agencies and local organizations. In the fall of 2005, The Nature Conservancy (TNC), the Matanuska-Susitna Borough (MSB), Alaska Department of Fish and Game (ADF&G), and U.S. Fish and Wildlife Service (USFWS) formalized a broad-based public and private partnership. From the beginning, this diverse partnership has attracted local community groups; local, state, and federal agencies; businesses; non-profit organizations; Native Alaskans; and individual landowners. The Partnership has sought to include anyone concerned about conserving salmon in the Mat-Su Basin.

This focus on a bottom-up, locally driven, voluntary and non-regulatory effort was inspired by the approach outlined in the National Fish Habitat Action Plan¹. The mission of the National Fish Habitat Partnership is to “protect, restore, and enhance the nation’s fish and aquatic communities through partnerships that foster fish habitat conservation and improve the quality of life for the American people.”

¹ www.fishhabitat.org

The Intent of this Strategic Action Plan

In 2007 the Mat-Su Salmon Partnership embarked on an 18-month-long process to develop a Strategic Action Plan. In the 2008 plan, the Partnership selected eight areas of conservation strategies to address plus three over-arching science strategies to increase our knowledge about the location and characteristics of salmon habitat in the Mat-Su: fish distribution and life-cycle use, water quantity, and water quality.

In the last five years, much has happened in the Mat-Su Basin. Population growth and the accompanying development have continued in the Knik-Wasilla-Palmer core area and along the Parks Highway. Industry interest in coal mining in the Matanuska Valley has returned, and the state is reconsidering a decades-old plan to dam the upper Susitna River for hydroelectric power. Invasive aquatic plants have found their way to southcentral Alaska. Scientists have learned more about predicting climate change and the impacts it will have to precipitation, temperatures, and other climatic attributes. By the summer of 2013, the State of Alaska had designated seven salmon populations as Stocks of Concern,² resulting in sportfishing closures and restrictions on commercial fishing in Cook Inlet.

The Mat-Su Salmon Partnership has also been busy in the last five years addressing the strategies of the 2008 Strategic Action Plan. Partners have replaced over 70 culverts that prevented adult and juvenile salmon from accessing key spawning and rearing habitat in Mat-Su streams. The state started a streambank restoration cooperative program that has helped restore riparian areas on private and public lands. Over 5000 acres of wetlands, riparian areas, and uplands important for salmon habitat have been protected through conservation easements, transfer to state conservation units, and wetland preservation banks. In the core area, wetlands have been mapped and characterized more accurately, the borough has a Wetlands Management Plan, and the Corps is working with partners to develop a functional assessment of wetlands. Throughout the borough, a higher resolution and more recent map of impervious surfaces has been created, and the borough is working on a Stormwater Management Plan.

One thing that hasn't changed since 2008 is the purpose of this strategic action plan. The Partnership Steering Committee developed the Strategic Action Plan to identify Partnership long-term goals and strategies and to provide a tool the Partnership can use to prioritize projects related to fish habitat goals in the Mat-Su Basin. The intent of this Strategic Action Plan is to identify long-term goals, strategies, and voluntary actions that the Partnership and others can undertake to conserve salmon habitat. The Steering Committee planned to revisit the original Strategic Action Plan every 3 to 5 years, and this edition is that first update to address changes in the Mat-Su Basin that could significantly affect the situation for salmon habitat.

The Partnership developed this Strategic Action Plan to identify collaborative projects and other actions that will protect and restore important habitat for wild salmon in the Mat-Su Basin. The Steering Committee initiated the plan under the guidance of the NFHP and administered the planning process. The NFHP clearly identifies fish habitat as the focus for partnerships. The Steering Committee decided that the planning process would focus exclusively on habitat-related issues to remain consistent with the intent of the NFHP and the Mat-Su Salmon Partnership. The

² Note that as this updated 2013 plan 'went to press,' the Alaska Board of Fisheries listed the Sheep Creek population of Chinook as a Stock of Concern.

plan scope includes not only freshwater fish habitat in the Mat-Su Basin, but nearshore, estuarine, and marine habitat in Upper Cook Inlet as well (Figure 1).

The Steering Committee identified three specific purposes for the plan:

1. Identify important habitats for salmon and other fish species in the Mat-Su Basin.
2. Prioritize fish habitat conservation actions, including protection, enhancement, and restoration of key habitat, education and outreach, research, and mitigation.
3. Identify potential collaborations and funding sources for partners to address fish habitat conservation.

The future of Mat-Su salmon depends upon what happens to them during each life stage, from their incubation and rearing in freshwater, to their maturation in saltwater, and during their return back to freshwater to spawn. While debate continues about the reasons for decline of some salmon stocks across Alaska and in the Mat-Su, it is well-known that freshwater habitat loss and fragmentation are some of the primary drivers in the decline of anadromous fish elsewhere in the U.S. and the world. The Partnership's goal is to ensure that Mat-Su salmon have healthy habitats in the Mat-Su and upper Cook Inlet so that habitat loss does not contribute to the other stresses that Mat-Su salmon must endure. In the Mat-Su, healthy salmon habitat exists throughout the basin, and our top priority is to protect and maintain that habitat wherever possible.

Overall Health of Mat-Su Basin Salmon and Habitat

In 2008, the assessment of the health of wild salmon and their habitat indicated that, *taken as a whole across the Mat-Su Basin*, salmon and most of their habitats were healthy and required minimal human intervention for long term survival. A more local look at individual attributes of health, however, pointed out concerns about long-term sustainability of Mat-Su Basin salmon and some of the habitats they require for survival. For salmon, that assessment suggested that numbers for some sockeye, pink, and chum salmon runs may have been below a sustainable level and that some stocks might be seriously degraded in time without conservation action. Data for Mat-Su salmon populations is limited so the status of many stocks, especially in the Matanuska River watershed, is based on anecdotal information, professional judgment, or is unknown.

Since 2008, it has become evident that some Susitna salmon are experiencing significant declines. That year, the Alaska Board of Fisheries listed Susitna sockeye salmon as a Stock of Concern. Chinook salmon in that drainage missed their escapement goals for six years, and the Alaska Board of Fisheries listed six populations as Stocks of Concern in 2011. Little Susitna Coho salmon have missed escapement goals for the past four years.

Not surprisingly, the health of Mat-Su Basin salmon habitat is linked to the level and location of human activity in the basin. The ecosystems that coincide with the more developed areas of the Mat-Su Basin may become seriously degraded without human intervention. Reduced health of these ecosystems is linked to alteration of native riparian vegetation, degraded water quality, and water flow changes, all of which have reached levels that may impair these ecosystems in the long-term. Within these areas, ADEC has identified over two dozen waterbodies that lack

sufficient data to determine water quality and has designated four as Impaired. Some water pollution in these areas may be due to the replacement of more than 10% of native vegetation with impervious surfaces that concentrate stormwater runoff in surface waters.

Ecosystems coinciding with areas of little development have good overall health. Yet even these terrestrial ecosystems contain waterbodies that lack sufficient data, and ADEC has determined that insufficient information exists to assess how well Cook Inlet meets water quality standards. These are also largely the areas where the Stocks of Concern live out the freshwater portions of their life.

The current state of salmon and ecosystem health directs us to which species and ecosystems may require protection and prevention measures versus restoration to regain health. Preventative conservation measures in the undeveloped areas can ensure that these ecosystems remain healthy for salmon and other aquatic species. The more impacted terrestrial ecosystems of the developed areas will require not only protection against additional alteration and degradation but also mitigation and restoration actions to restore health.

Potential Threats to Salmon & Their Habitats

Many human activities pose potential threats to salmon and their habitats. Human activities can affect salmon by degrading or eliminating habitat; removing vegetation from wetlands and the banks of streams and lakes; degrading water quality; changing river flows; disconnecting flows between streams, lakes, and wetlands; or blocking fish passage. Lack of data to make management decisions can also be an impediment to conserving salmon and their habitats. Most of these activities are vital to human communities and can be mitigated to reduce or eliminate negative impacts to salmon and salmon habitat.

For the 2013 plan update, the scoping process confirmed that the seven potential threats in the 2008 plan were still important areas for the Partnership and recommended that four more potential threats be included in the Strategic Action Plan. An existing threat was expanded to include invasive aquatic plants along with northern pike. Climate change was included in this updated plan because more information exists and a clearer role for the Partnership emerged. Motorized off-road recreation has continued to negatively impact some salmon habitat in the Mat-Su, and some partners have been working with user groups to address the problem. Large-scale resource development includes diverse activities like hydropower and coal mining because the Partnership’s roles around these potential threats – science and education – are anticipated to be similar. This plan outlines the potential impacts to salmon habitat from each threat and summarizes the current status or level of activity of the threat in the Mat-Su Basin.

Potential Threats to Mat-Su Basin Salmon
Aquatic Invasive Species
Climate Change
Development in Estuaries and Nearshore Habitats
Ground & Surface Water Withdrawals
Household On-site Septic Systems & Wastewater
Large-scale Resource Development
Motorized Off-road Recreation
Residential, Commercial, & Industrial Development
Roads & Railroads
Stormwater Runoff

Conservation Strategies

The Mat-Su Salmon Partnership’s broad goals are to protect salmon and their habitats in the Mat-Su Basin and Upper Cook Inlet, mitigate threats to salmon and their habitats, restore connectivity between salmon habitats, and increase knowledge about salmon and their use of freshwater and marine habitats. The strategies for the Mat-Su Basin echo those that the National Fish Habitat Partnership uses to guide work at the national and partnership level.

A situation analysis for each threat brought into focus the more discrete issues upon which the Partnership can act and identified 11 conservation strategies to conserve salmon in the Mat-Su Basin. These strategies address the sources of the impacts and the impacts themselves. Some impacts have multiple sources that can be addressed collectively. Other potential threats have unique situations that lend themselves to being addressed specifically. For that reason, the conservation strategies are organized around a mix of impacts and threats.

Conservation strategies are composed of objectives, which define a vision of success, and strategic actions that will achieve the objectives. The Partnership’s strategies fall into four broad categories: protection, restoration, education, and science. In many places in the Mat-Su Basin, salmon and their habitats are healthy so protective measures, like reservations of water, land use planning, and voluntary land protection, can prevent degradation. In other places, restoration is necessary to re-establish fish passage and productive habitat. Public education, including best management practices, can prevent and mitigate impacts from human activities and help the general public connect their own individual actions to impacts on salmon habitat and water quality. Better understanding of salmon’s needs throughout the Mat-Su Basin and Cook Inlet would improve management of salmon habitat and implementation of the recommendations in this plan. Three science strategies are highlighted because the information they will gather will inform multiple conservation strategies.

Conservation Strategies	
1	Overarching Science Strategies
2	Alteration of Riparian Areas
3	Climate Change
4	Culverts that Block Fish Passage
5	Filling of Wetlands
6	Impervious Surfaces & Stormwater Pollution
7	Aquatic Invasive Species
8	Large-scale Resource Development
9	Loss or Alteration of Water Flow or Volume
10	Loss of Estuaries & Nearshore Habitats
11	Motorized Off-road Recreation
12	Wastewater Management

The Partnership’s conservation strategies encourage collaboration among multiple partners to achieve common objectives that would be difficult for any one partner to accomplish alone. In some cases, comprehensive protection can be accomplished with revisions to local and state laws and increased enforcement of such laws; some strategies recommend such changes but in no way bind affected agencies to implement these strategies. What follows are objectives and strategic actions that the Partnership thinks it can accomplish in the next 10 to 20 years.

1. Overarching Science Strategies

Objective 1.1: Anadromous Waters Catalog

By 2020, ensure that all anadromous fish habitat in the Mat-Su Basin is included in the Anadromous Waters Catalog and thus given basic protections afforded under state law. Efforts to catalog anadromous fish should identify life stage information and document non-anadromous fish.

Objective 1.2: Habitat Quality

By 2020, characteristics of habitats that are critical for salmon at each life stage (spawning, rearing, and overwintering) will be identified and used to develop critical habitat definitions to identify places that provide these habitats.

Objective 1.3: Comprehensive Surface and Groundwater Studies

By 2018, an increased understanding of surface and groundwater exchange, including locations, quantities, flows, and variability in the Mat-Su Basin, will be sufficient to aid in identifying critical salmon habitat for each life stage.

Objective 1.4: Water Quality Monitoring

By 2018, a comprehensive baseline and monitoring program for water quality exists to track and manage changes in Mat-Su Basin waterbodies.

Objective 1.5: Index Watersheds

By 2016, a minimum of three index watersheds are locations for long-term, interdisciplinary monitoring needed to understand the relationships between salmon, habitat health, and changes induced by human activities and climate change.

2. Alteration of Riparian Areas

Objective 2.1: Identification of Priority Riparian Areas for Salmon

By 2018, 50% of salmon riparian areas will be field surveyed, mapped and prioritized for long-term legal protection and/or restoration.

Objective 2.2: Protection of Priority Salmon Riparian Habitat

By 2018, secure long-term protective status (e.g., conservation easements, designated parks, land acquisition) of at least 10% of priority riparian habitats that have not been significantly altered.

Objective 2.3: Restoration of Priority Riparian Habitat

By 2018, 5% of priority riparian habitats that have been altered are restored.

3. Climate Change

Objective 3.1: Comprehensive Baseline and Monitoring for Stream Temperatures

By 2015, comprehensive baseline and monitoring program for stream temperatures exists to track and manage changes in priority Mat-Su Basin waterbodies and impacts on salmon and salmon habitat.

Objective 3.2: Integrate Climate Change into Priorities

By 2015, integrate climate change into habitat conservation strategies and prioritizations.

4. Culverts that Block Fish Passage

Objective 4.1: No New Barriers

By 2015, effective fish passage is maintained at new road crossings through improved coordination between agencies, sufficient resources for applying current state statutes, and use of improved design and construction practices for effective fish passage.

Objective 4.2: Fish Passage Restoration

By 2015, fish passage will be restored in 65 priority culverts that currently block passage of juvenile or adult fish.

5. Filling of Wetlands

Objective 5.1 Identify, Map and Assess Functions of Wetlands for Salmon

By 2018, wetlands that are important for salmon will be identified, mapped and assessed for their functional importance for salmon.

Objective 5.2: Conserve Wetlands for Salmon

By 2020, loss of wetlands that are important for salmon either as spawning or rearing habitat, re-charge of streams, or filtration of streams, will be avoided, minimized, or mitigated with protection, management, and enhancement.

6. Impervious Surfaces and Stormwater Pollution

Objective 6.1: Minimization of Impacts on Water Quality

By 2018, new housing and urban development sites will not result in stormwater runoff that alters the quantity or quality of water in streams and lakes. All water flowing into salmon habitat will equal or exceed the quality necessary to protect the growth and propagation of fish as determined by state water quality standards for aquatic life.

Objective 6.2: Minimize Road Runoff

By 2018, the extent and potential of road runoff as a contributor to water quality issues at salmon streams will be known and Best Management Practices developed to minimize impacts.

Objective 6.3: Imperviousness Impact Assessment

By 2018, understand the magnitude of impact of impervious surfaces and stormwater runoff in the most developed watersheds.

7. Aquatic Invasive Species

Objective 7.1: Prevention

By 2016, identify potential vectors for introducing or spreading Aquatic Invasive Species (AIS) in the Mat-Su and conduct outreach to inform and influence target audiences so that their activities do not introduce or spread AIS.

Objective 7.2: Early Detection and Surveillance

By 2015, periodic surveillance surveys designed to have a high likelihood of detecting AIS at an incipient stage of infestation will be completed at priority waterbodies. Priorities are determined based on level of risk for introduction of AIS.

Objective 7.3: Rapid Response

By 2015, procedures are in place to respond rapidly to any newly discovered introductions or to newly detected expansion of existing AIS.

Objective 7.4: Control

By 2015, an effective program of integrated pest management for invasive species is developed and implemented, including elements of containment, eradication, control, and restoration.

8. Large-scale Resource Development

Objective 8.1 Education and Outreach about Large-scale Resource Projects

By 2017, the public will have access to information about proposed large-scale resource development projects and their potential to affect salmon and their habitats.

Objective 8.2: Agency Assistance for Large-scale Resource Projects

By 2017, state and federal agencies and stakeholders involved in permitting processes for large-scale resource development projects have the data, analytical tools, and expertise that they need to understand the potential to affect salmon and their habitat.

Objective 8.3: Address Data Gaps

By 2017, data gaps for large-scale resource development projects will be identified and filled as feasible for the licensing and permitting processes.

9. Loss or Alteration of Water Flow or Volume

Objective 9.1: Instream Flow on Anadromous Waters

By 2020, partner organizations have filed applications for reservations of water with ADNR to preserve the flow regimes of priority anadromous lakes and streams.

Objective 9.2: Community Water Needs Study

By 2020, current and future use and need of ground and surface water by Mat-Su Basin communities are quantified in order to assess impacts to water quantity.

10. Loss of Estuaries and Nearshore Habitats

Objective 10.1: Salmon Ecology of Cook Inlet

By 2018, implement the Knik Arm Salmon Ecology Integrated Research Plan (HDR, 2010) to significantly improve the understanding of salmon ecology in Knik Arm.

Objective 10.2: Conserve Estuaries for Salmon

By 2018, assure no long-term impairments of vulnerable coastal habitats from incompatible shoreline developments.

11. Motorized Off-road Recreation

Objective 11.1: Impacts to Salmon and Salmon Habitat

By 2018, qualify the impacts to salmon and salmon habitat from off-highway vehicles (OHV) use regarding stream morphology and water quality to specifically determine physical damage to the stream and banks and hydrocarbon and sedimentation inputs to streams.

Objective 11.2: Mitigate OHV Use at Streams

By 2018, establish effective and publicly acceptable mechanisms to support stream health near OHV trails and at stream crossings.

12. Wastewater Management

Objective 12.1: Improved Wastewater Disposal

By 2018, septic systems are designed and constructed based on parcel size, number of parcels in a subdivision, and soil suitability, with an emphasis on developing community systems and connecting to public systems, so that septic systems do not contribute to degraded water quality.

Objective 12.2: Expanded Wastewater Infrastructure

By 2018, Mat-Su Borough and its communities have a wastewater infrastructure and treatment facilities that can handle sewage discharges in the Mat-Su Borough.

Objective 12.3 Wastewater Pollution Prevention

By 2018, quantify the extent and sources of possible wastewater pollution to surface and ground waters from on-site septic systems and wastewater discharge.

The Future for the Mat-Su Salmon Partnership

The Mat-Su Salmon Partnership developed its first Strategic Action Plan in 2008 and updated the plan in 2013 in an effort to help partners set priorities for collaborative actions to conserve habitat for wild salmon that spawn, rear, or over-winter in the Mat-Su Basin. Relevant actions that could be guided by this plan include regulatory development; permitting; protection, restoration, and mitigation activities; assessment and research projects; and education and outreach activities.

This Strategic Action Plan sets out priorities for this Partnership to conserve wild salmon and their habitat in the Mat-Su Basin. Achievement of these goals and objectives will depend upon commitment by partner organizations and collaboration between partners. The history of salmon in other parts of the world indicates that wild salmon cannot persist in their full abundance unless stakeholders work together to protect salmon habitat. Within this Partnership, each partner has unique capabilities, responsibilities, and resources that can address a key component for salmon habitat. Only in working together, can all the key components for salmon habitat be protected to ensure healthy, abundant salmon runs in the Mat-Su Basin into the future.

The Scope of the Strategic Plan: Mat-Su Basin and Upper Cook Inlet





*Thriving fish, healthy habitats, and vital communities
in the Mat-Su Basin*

**Mat-Su Basin Salmon Habitat Partnership
2013**