

Information Sheet on Ramsar Wetlands (RIS) – 2006-2008 version

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Categories approved by Recommendation 4.7 (1990), as amended by Resolution VIII.13 of the 8th Conference of the Contracting Parties (2002) and Resolutions IX.1 Annex B, IX.6, IX.21 and IX.22 of the 9th Conference of the Contracting Parties (2005).

Notes for compilers:

1. The RIS should be completed in accordance with the attached *Explanatory Notes and Guidelines for completing the Information Sheet on Ramsar Wetlands*. Compilers are strongly advised to read this guidance before filling in the RIS.
2. Further information and guidance in support of Ramsar site designations are provided in the *Strategic Framework and guidelines for the future development of the List of Wetlands of International Importance* (Ramsar Wise Use Handbook 7, 2nd edition, as amended by COP9 Resolution IX.1 Annex B). A 3rd edition of the Handbook, incorporating these amendments, is in preparation and will be available in 2006.
3. Once completed, the RIS (and accompanying map(s)) should be submitted to the Ramsar Secretariat. Compilers should provide an electronic (MS Word) copy of the RIS and, where possible, digital copies of all maps.

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Designation

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Site Reference Number

2. Date this sheet was completed/updated:

October –November, 2007

3. Country:

Kazakhstan

4. Name of the Ramsar site:

The precise name of the designated site in one of the three official languages (English, French or Spanish) of the Convention. Alternative names, including in local language(s), should be given in parentheses after the precise name.

Alakol-Sasykkol Lakes System

5. Designation of new Ramsar site or update of existing site:

This RIS is for (tick one box only):

a) Designation of a new Ramsar site ; or

b) Updated information on an existing Ramsar site

6. For RIS updates only, changes to the site since its designation or earlier update:

a) Site boundary

b) Site area

The Ramsar site boundary and site area are unchanged:

or

If the site boundary has changed:

i) the boundary has been delineated more accurately ; or

ii) the boundary has been extended ; or

iii) the boundary has been restricted**

** **Important note:** If the boundary and/or area of the designated site is being restricted/reduced, the Contracting Party should have followed the procedures established by the Conference of the Parties in the

Annex to COP9 Resolution IX.6 and provided a report in line with paragraph 28 of that Annex, prior to the submission of an updated RIS.

b) Describe briefly any major changes to the ecological character of the Ramsar site, including in the application of the Criteria, since the previous RIS for the site:

7. Map of site:

Refer to Annex III of the *Explanatory Note and Guidelines*, for detailed guidance on provision of suitable maps, including digital maps.

a) A map of the site, with clearly delineated boundaries, is included as:

i) a hard copy (required for inclusion of site in the Ramsar List): ;

ii) an electronic format (e.g. a JPEG or ArcView image) ;

iii) a GIS file providing geo-referenced site boundary vectors and attribute tables .

b) Describe briefly the type of boundary delineation applied:

e.g. the boundary is the same as an existing protected area (nature reserve, national park, etc.), or follows a catchment boundary, or follows a geopolitical boundary such as a local government jurisdiction, follows physical boundaries such as roads, follows the shoreline of a waterbody, etc.

- a) The borders of the wetlands match the borders of water basins included into the territory of the reservoirs (lakes, rivers) of the Alakol Lakes and littoral areas, where water plays a critical biological and economic role.

8. Geographical coordinates (latitude/longitude, in degrees and minutes):

Provide the coordinates of the approximate centre of the site and/or the limits of the site. If the site is composed of more than one separate area, provide coordinates for each of these areas.

46 ° 16' 17,447'' N, 81 ° 32' 1,795'' E - approximate center point of the wetlands.

Coordinates of the Alakol-Sasykkol wetlands borders:

№	y	x
1	46° 40' 0,560'' N	80° 29' 23,231'' E
2	40° 44' 32,735'' N	80° 33' 8,466'' E
3	46° 36' 41,234'' N	81° 37' 24,634'' E
4	46° 6' 41,271'' N	82° 13' 2,993'' E
5	45° 29' 45,856'' N	82° 6' 32,625'' E
7	45° 33' 35,234'' N	81° 59' 4,589'' E
8	46° 14' 1,635'' N	81° 0' 38,347'' E
9	46° 35' 41,271'' N	80° 37' 51,722'' E

9. General location:

Include in which part of the country and which large administrative region(s) the site lies and the location of the nearest large town.

South Eastern Kazakhstan, North-Eastern part of Almaty Oblast and South-Eastern part of East Kazakhstan Oblast. The site is 30 km from the rayon center, Usharal city, which has a population of 25,000 persons.

10. Elevation: (in metres: average and/or maximum & minimum)

Average elevation of the site is 350 meters above sea level.

11. Area: (in hectares)

Total site area is **914,663 ha**

12. General overview of the site:

Provide a short paragraph giving a summary description of the principal ecological characteristics and importance of the wetland.

Alakol-Sasykkol lakes system is Kazakhstan's largest reserve for nesting wetland birds and site of their mass moulting and a major site of migratory stops. Large numbers of waterfowl and semi-aquatic birds annually migrate through this lakes system. These lakes, located in an ancient tectonic depression, are a unique complex of fresh-water and salt-water ecosystems, which due to a periodically changing hydrological regime are also characterized by a general high bioproductivity. Surface soil-plant associations are also characterized by a great variety of species and their mosaic arrangement. Humidified, desert, lowland and mountainous types of habitats are located in a very close proximity, which causes a rich composition of flora and fauna numbering over 2 thousand species and forms including relic and endemic species, e.g. floating moss (*Salvinia natans*), Balkhash perch (*Perca schrenkii*), Balkhash Marinka (*Schizothorax argentatus*), relic seagull (*Larus relictus*) and Selevinia (*Selevinia betpakdalensis*). These lakes play a special ecological role in supporting dozens of populations of waterfowl moving along one of the most important flyways, Central-Asian-Indian flyway.

13. Ramsar Criteria:

Tick the box under each Criterion applied to the designation of the Ramsar site. See Annex II of the *Explanatory Notes and Guidelines* for the Criteria and guidelines for their application (adopted by Resolution VII.11). All Criteria which apply should be ticked.

1 • 2 • 3 • 4 • 5 • 6 • 7 8 • 9

14. Justification for the application of each Criterion listed in 13 above:

Provide justification for each Criterion in turn, clearly identifying to which Criterion the justification applies (see Annex II for guidance on acceptable forms of justification).

Criterion 1a - The wetlands are a unique natural complex of fresh- and salt-water ecosystems.

The Alakol-Sasykkol wetlands are the largest reserve of nesting waterfowl, the area of their moulting and important area of migration stops along the flyways of hundreds of thousands of waterfowl and semi-aquatic birds. For the conservation and effective functioning of the ecosystems these wetlands should be standards of protected natural environment and have large protected area.

Criterion 2 – The reservoirs support 13 vulnerable or endangered species: Dalmatian pelican (*Pelecanus crispus*), Great White Pelican (*Pelecanus onocrotalus*), Black Stork (*Ciconia nigra*), spoonbill (*Platalea leucorodia*), Bewick's swan (*Cygnus bewickii*), ferruginous duck (*Aythya nyroca*), white-headed duck (*Oxyura leucocephala*), relic seagull (*Larus relictus*) and black-headed gull (*Larus ichthyaetus*). Two the vulnerable species of mammals – the Marbled Polecat (*Vormela peregusna*) and Goitered Gazelle (*Gazelle subgutturosa*) on the surrounding of the wetlands coast zone are inhabit.

Scientific Name	Vernacular Name	IUCN Status	CITES Status	CMS Status	National Status
<i>Pelecanus crispus</i>	Kudrjavyi pelican	VU	Appendix 1	Appendix 1	Red Data Book
<i>Pelecanus onocrotalus</i>	Rozovyi pelikan	LC	-	Appendix 1	Red Data Book
<i>Ciconia nigra</i>	Chernyi aist	LC	Appendix 2	Appendix 2	Red Data Book
<i>Platalea leucorodia</i>	Kolpitzza	LC	Appendix 2	Appendix 2	Red Data Book
<i>Cygnus bewickii</i>	Malyi lebed	-	-	Appendix 2	Red Data Book

Scientific Name	Vernacular Name	IUCN Status	CITES Status	CMS Status	National Status
<i>Aythya nyroca</i>	Beloglazaja chernet	NT	-	Appendix 1	Red Data Book
<i>Oxyura leucocephala</i>	Savka	EN	-	Appendix 1	Red Data Book
<i>Larus relictus</i>	Reliktovaja schaika	VU	Appendix 1	Appendix 1	Red Data Book
<i>Larus ichthyaetus</i>	Schernogolovi chochotun	LC	-	Appendix 2	Red Data Book
<i>Grus virgo</i>	Krasavka	LC	Appendix 2	Appendix 2	Red Data Book
<i>Grus grus</i>	Seryi zhuravl	LC	Appendix 2	Appendix 2	Red Data Book
Mammals					
<i>Vormela peregusna</i>	marbled polecat	VU	-	Non migrant	Red Data Book
<i>Gazella subgutturosa subgutturosa</i>	Persian Goitered Gazelle	VU	-	Appendix 2	Red Data Book

Criterion 3. 112 species of waterfowl and semi-aquatic birds dwell at the reservoirs at different stages of the annual biological cycle with at least 45,000 birds dwelling during the nesting period, 60,000 birds staying there during the moulting period and 150,000 birds during seasonal migrations.

Criterion 4. The lakes are a site of summer moulting of different species waterfowl:

Scientific name	English name	Vernacular name	Moulting population
<i>Podiceps cristatus</i>	Great Crested Grebe	Schomga	5,000
<i>Cygnus olor</i>	Mute Swan	Lebed-sheepun	400
<i>Cygnus cygnus</i>	Whooper Swan	Lebed-klikun	80
<i>Tadorna ferruginea</i>	Ruddy Shelduck	Ogar	7,000
<i>Anas penelope, A. crecca, A. strepera, A. acuta</i>	Dabbling ducks	Reschnyje utki	7,000 – 9,000
<i>Netta rufina</i>	Red Crested Pochard	Krasnonosyi nyrok	8,000
<i>Aythya ferina</i>	Common Pochard	Krasnogolovi nyrok	3,000
<i>Fulica atra</i>	Common Coot	Lysukha	20,000
<i>Limosa limosa</i>	Black-tailed Godwit	Bolshoy veretennik	8,000

Criterion 5. According to spring/autumn 2007 accounting data the total one-time number of waterfowl and semi-aquatic birds in these wetlands was 30,000 and 90,000 birds accordingly.

Scientific name	Name		Population Min/Max	Period present
	English	Russian/vernacular		
<i>Podiceps sp. (P.cristatus mostly).</i>	Grebes	Poganky	<u>1,000</u> 3,000	<u>spring</u> autumn
<i>Egretta alba, Ardea cinerea</i>	Great Egret, Grey Heron	Tzaplya	<u>200</u> 800	<u>spring</u> autumn
<i>Anser anser, Anser fabalis</i>	Grey Lag-Goose, Bean Goose	Seryi goose, Gumennik	<u>500</u> 5,000	<u>spring</u> autumn
<i>Cygnus olor, Cygnus cygnus</i>	Mute Swan, Whooper Swan	Lebed-shypun, Lebed-klikun	<u>100</u> 600	<u>spring</u> autumn
<i>Anas penelope, A. crecca, A. strepera, A. acuta. A. chrypeata</i>	Dabbling Ducks	Svijaz, svistunok, seraja utka, shilokhvost, shirokonosska	<u>5,000</u> 10,000	<u>spring</u> autumn

Name			Population Min/Max	Period present
Scientific name	English	Russian/vernacular		
<i>Netta rufina</i> , <i>Aythya ferina</i> , <i>Aythya fuligula</i>	Diving Ducks: Red-crested Pochard, Common Pochard. Tufted Duck	Kranonosyi nyrok, Krasnogolovyi nyrok, Chochlataja chernet	<u>3,000</u> 6,000	<u>spring</u> autumn
<i>Fulica atra</i>	Coot	Lysucha	<u>5,000</u> 20,000	<u>spring</u> autumn
<i>Larus ichthyaeus</i>	Great Black-headed Gull	Chernogologyi hohotun	1,200	<u>spring</u> summer
<i>Larus cachinnans</i> , <i>L. ridibundus</i> , <i>L. minutus</i>	Caspian Gull, Black-headed Gull., Little Gull	Chochotunja, osernaja chaika, malaja chaika	<u>2,000</u> 7,000	<u>spring</u> autumn
<i>Hydroprogne caspia</i> , <i>Sterna hirundo</i> , <i>Sterna minuta</i> , <i>Gelochelidon nilotica</i> , <i>Chlidonias leucopterus</i> , <i>Chlidonias niger</i>	Terns	Tschgrava, rechnaja krachka, malaja krachka, chaikonosaja krachka, belokrylaja krachka, chernaja krachka	<u>3,000</u> 8,000	<u>spring</u> autumn
<i>Charadrius sp.</i> , <i>Tringa sp.</i> , <i>Calidris sp.</i>	Waders	Kuliki	<u>10,000</u> 30,000	<u>spring</u> autumn

Criterion 6: This wetland supports 1% or more of the Great Cormorant (*Phalacrocorax carbo*) in the South West Asian population (subspecies: *sinensis*) up to 7,000 individuals have been recorded at the site during summer vagrant. Relict Gull (*Larus relictus*) – about 1,200 pairs during breeding season (periodically). Red-crested Pochard (*Netta rufina*) – 45,000 individ. on autumn migration, and Great Back-headed Gull (*Larus ichthyaeus*) – 600-650 pairs during breeding season (Wetlands International 2007).

Name			Population Min/Max	1% Threshold	Period present
Scientific name	English	Russian/vernacular			
<i>Phalacrocorax carbo sinensis</i>	Great Cormorant	Bolshoy baklan	<u>1,000</u> 7,000	1,000	<u>spring</u> autumn
<i>Larus relictus</i>	Relict Gull	Reliktovaya chayka	<u>120</u> 2,400	120	<u>spring</u> summer
<i>Netta rufina</i>	Red-crested Pochard	Krassnonossyi nyrok	<u>2,500</u> 45,000	2,500	<u>spring</u> autumn
<i>Larus ichthyaeus</i>	Great Back-headed Gull	Chernogolovyi hohotun	<u>1,000</u> 1,200	1,000	<u>spring</u> summer

Criterion 7: The native ichtyofauna of these reservoirs totals 9 species: Eurasian minnow (*Phoxinus phoxinus*), Balkhash Marinka (*Schisothorax argentatus*), scaleless osman (*Dyplichus dybowskii*), Tibetan stone loach (*Noemacheilus stoliczkaei*), grey stone loach (*Noemacheilus dorsalis*), spotted stone loach (*Noemacheilus stranchi*), plain stone loach (*Noemacheilus labiatus*), Severtsov's loach (*Noemacheilus sewerzovi*) and Balkhash perch (*Perca sbernkii*).

Immigrant species including carp (*Cyprinus carpio*), bream (*Abramis brama*), pike perch (*Stizostedion lucioperca*), crucian (*Carasius auratus*), which are now core commercial fishing resources of these wetlands.

15. Biogeography (required when Criteria 1 and/or 3 and /or certain applications of Criterion 2 are applied to the designation):

Name the relevant biogeographic region that includes the Ramsar site, and identify the biogeographic regionalisation system that has been applied.

a) a) biogeographic region:

Most part of the Alakol depression at the bottom of which the Alakol lake is, belongs to the Central Asian (Xinjiang) desert area.

The wetlands are located within Alakol Hollow, which borders Tarbagatai Ridge in the north, Zhetysu (Dzhungar) Alatau Ridge in the south and Barlyk Ridge in the east and southeast. There is a narrow gate between Barlyk and Zhetysu (Dzhungar) Alatau called Zhetysu (Dzhungarian) Gate. In the north, the borders of the hollow are quite conditional, since no clear natural boundaries can be traced here.

The lakes located in an ancient tectonic depression are a unique complex of fresh-water and salt-water ecosystems and form a part of Balkhash-Ili-Alakol province of Semirechye desert area of Eurasian northern cold desert

b) biogeographic regionalisation scheme (include reference citation):

Botanical Geography of Kazakhstan and Middle Asia, Desert Regions. St-Petersburg, 2003, page 423.

16. Physical features of the site:

Describe, as appropriate, the geology, geomorphology; origins - natural or artificial; hydrology; soil type; water quality; water depth, water permanence; fluctuations in water level; tidal variations; downstream area; general climate, etc.

General landscape description. As far as the geological structure and morphology are concerned, the locality accommodating the wetlands includes 3 main areas, namely, submontane sloping plains, hilly-ridge sandy plains and flat lake-alluvial plains. Most part of the Alakol depression is desert plain, the lakes are located at the bottom. The landscapes were formed during the post-glacial xerothermic period and retain the features of ancient sea and lacustrine sediments. The relief of sloping plains is characterized by ring-shaped lacustrine structures and extensive alluvial cones on river terraces. The plain between the Alakol and Sasykkol is formed by ancient lake foliated clay, including sand bands.

Types of soil. The soil cover of Alakol hollow is represented by 22 soil types and subtypes united into 3 groups: automorphous, semi-hydromorphic and intrazonal. Desert types of soil prevail. Alluvial meadow soil is widespread at the river and coastal terraces.. Saline areas, solochaks, are often met in the depressions, including the Alakol coast. Low-calcareous soil is typical for elevated areas.

Hydrogeography. All lakes of the Alakol-Sasykkol system (529 lakes in total) are of natural origin. The largest lakes are Alakol, Sasykkol, Koshkarkol and Zhalanashkol.

Features	Lakes			
	Alakol	Sasykkol	Koshkarkol	Zhalanashkol
Length, km	104.0	49.6	18.3	8.8
Width, km	52.0	19.8	9.6	6.3
Coastline	384.0	182.0	57.3	26.2
Water surface area, km ²	2,650	736	120	40.6
Inmost depth, m	54	4.7	5.8	3.4
Water volume, mln. m ³	58,560	2,434	489	99.5

Characteristics of catchment basin. The wetland area accommodates 529 lakes with 513 of them having a water table of over 1 sq. km. The largest four lakes, i.e. Alakol, Sasykkol, Koshkarkol, Zhalanashkol occupying the central, most depressed area of the hollow, account for 95% of the total area of the water table and for over 99% of water reserves of all lakes (approx. 61.6 bln.m³). The deepest part of Alakol hollow is occupied by the main system lake, deep-water closed Alakol Lake concentrating about 95% of the aggregate water mass of the 4 large lakes. To the north-west of the Alakol Lake are occasionally running-water shallow lakes, Koshkarkol and Sasykkol, to its south is the Zhalanashkol Lake. The hydrographic river network of the basin is represented by rivers flowing down from southern slopes of Tarbagatai Ridge, western slopes of Barlyk Ridge and northern slopes of Zhetysu Alatau. The largest rivers of the basin are Tentek, Urdzhar, Katynsu and Yemel.

Tentek is the basin's largest river. It rises in Zhetysu Alatau glaciers. It has a catchment area of 5,390 km² and is 200 km long. The Shinhaly river flows into the Tentek river near Usharal town. The Tentek

river carries about 40% of the surface inflow of lakes and forms a delta with an area of 295 sq. km when flowing into Alakol.

Hydrological regime of major lakes. The water balance of the Alakol Lake is variable, there is evidence of level fluctuations of 2 types: within-year variance with a range of 0.4-1.2 m and a long-term variance with a range of 4-7 m. Water is saltish (19-32 meq/l) and undrinkable. The lake's bottom sediments are grey mud or silty sand, in some places there are small patches of black mud and sandy silt. The banks are composed of various soils such as sand, clay and pebble stone. There are solid rock outcrops on the islands. The Alakol Lake is Kazakhstan's second largest and the only deep-water lake among Kazakhstan's closed lakes. The shoreline of the Alakol Lake is heavily indented with numerous peninsulas, capes, spits, gulfs and bays.

The Sasykkol Lake has an area of 736 sq. km, is 55 km long and 15 km wide. The average water depth is 3.3m, the maximum depth is 4.7m. The lake water is fresh. The Aral-Tobe peninsula cuts into the southeastern part of the lake, forming two bays, Bargen and Zhartas. There is Aral-Tobe Island in the western part of the lake. The lake shores are almost entirely low, boggy and covered with reeds. The maximum water temperature in late July is 28-29 C. Bottom soils are grey mud, sandy silt and sands. The shoreline soils are mainly sands and clay. There are solid rock outcrops in some places in the southern shoreline.

The Koshkarkol Lake located between Sasykkol and Alakol is Alakol group's third in size and second in depth. The lake is of an elliptical shape, extending from the south to the north with a slightly indented shoreline. The lake shores, except for the eastern one, are low, boggy and covered with reed. The relief of the slopes and the bottom of the hollow is characterized by homogeneous depth distribution. The maximum depth is 5.8 m, the average depth is 4 m.

The Alakol hollow lakes are characterized by secular and interdecadal cyclic (periodic) level fluctuations. Alakol maximum level was last reached in the XIII-XVI centuries. At that time there was one single reservoir, Sasyk-Alakol comprising the Alakol, Sasykkol and Koshkarkol Lakes discharging extra water into the Balkhash Lake. The highest water levels in this reservoir were 355-357 m (according to the Baltic system of heights). Periodic junctions of the Alakol lakes continued until the 19th century at 351-352 m above sea. A general level decline has been observed since the 16th-17th centuries. The general centuries-old range of the Alakol Lake is 21-25 m. The lowest Alakol Lake levels were 332-344 m (6th-8th centuries).

Unlike the Alakol Lake, Sasykkol and Koshkarkol are subject to short-period cyclical fluctuations lasting for 3-7 years. The secular and interdecadal level range of the Sasykkol and Koshkarkol lakes is different from the Alakol Lake due to peculiarities of the water balance and the form of hollows, which has to do with the presence of drainage. The interdecadal range of the Sasykkol Lake is 2-3m with the secular range being 3-4 m.

Sasykkol and Koshkarkol are occasionally running-water lakes with low and flat flooded shores. Here, the highest levels are reduced due to drains from these lakes to the Alakol Lake through channels and floods.

All lakes merge at 352 m above the sea level. When the Sasykkol level goes down to 350 m, the drainage from Sasykkol via offshore dykes stops and the Koshkarkol lake loses surface water inputs. Both lakes turn into closed saltish reservoirs. At century minimums (1840) the Koshkarkol lake can fully dry up. The levels of the Alakol lakes are currently undergoing the interdecadal maximum phase and the secular cycle recession phase. The interdecadal minimum should be expected in the late 20th- early 21st century.

The total rise in the Sasykkol level in spring/summer is 39 cm with the maximum being 41cm. The daily level growth during the intensive rise is 3-6 cm. The level recession starts in late July and continues until ice phenomena (early November).

During the observation period the Alakol lake showed evidence of a general rise in average annual levels, except for 1957 and 1963, when the level dropped by 5-8 cm. The total rise in the level over 26 years was 649cm. The average annual rise was 30 cm. The most dramatic rise occurred in 1958-1961 when the water had risen by 2,8m over 4 years. The highest rise, by 88 cm, was evidenced in 1960. The maximum average monthly level observed during the observation period, 1949-1982, occurred in June 1973 and was 350,12 m (according to the Baltic system of heights). 1975 recorded Alakol level recession by 20 cm per year. The average long-term range of Alakol level fluctuations is 60 cm.

The Alakol Lake is now undergoing a transgression phase. Long-term lake level fluctuations reaching 5-6 m are accompanied by significant changes in its shorelines.

Climatic characteristics. The climate of the area is extremely continental with dry summers and rather cold, little-snow and windy winters characteristic of extra-tropical deserts. Over a year, three basic types of air masses penetrate into the hollow: arctic, polar and tropical. The lakes usually remain frozen during 120-130 days, with ice thickness of about 60cm.

The average annual precipitations range from 250 mm in the central part of Alakol-Sasykkol system up to 800-1000 mm in the water-shed area of Tarbagatai and Zhetysu Alatau Ridges. A stable snow cover is observed starting from mid to late November till mid to late March. The highest snow cover is observed in mid-February, while in the south it is observed a little earlier. The average snow cover is 27cm high. Depending on the year it can range from 13 to 45 cm.

The maximum wind speed is 40-45 km/s at Sasykkol, 45-50 at Alakol and 60-70 km/s at Zhalanashkol.

The soil cover of Alakol hollow is represented by 22 soil types and subtypes united into 3 groups: automorphous, semi-hydromorphic and intrazonal.

17. Physical features of the catchment area:

Describe the surface area, general geology and geomorphological features, general soil types, and climate (including climate type).

The geographic location of the area and the history of formation of a large intermontane hollow have caused an exceptional diversity of the project territory's ecosystem organizations. Crucial for the development and functioning of the ecosystems in the hollow are modern geomorphologic processes. Accumulative plains, both sloping and flat, are a prevailing type of the wetland relief. The following types of plains have been identified: 1 - smoothly sloping piedmont plain; 2 - alluvial smoothly sloping plain; 3 - aeolian (sandy) hummock-ridge plain; 4 - porous-ridge relief of lake plain; 5 - a flat lake plain; 6 - alluvial and lake-alluvial plains of river flood beds and low terraces.

Salt accumulation consists in concentration of salts in depressed sites, where saline soils and sors occur. This process becomes particularly intensive in a flat lake plain and within the limits of alluvial smoothly sloping plains.

Erosion is observed in the valleys of Tentek, Shinhaly and other smaller rivers, whose valley sides feature erosion and deepening of the river beds. Most intensive are these processes during spring high-water and heavy rainfall season.

The soil cover of the Alakol hollow primarily includes the following types of automorphous zonal soils: sierozem, brown and gray-brown desert soils. Quite diverse is a set of intrazonal soils along the reservoir shores, including meadow-brown, meadow, meadow-boggy, boggy, solonetz and saline soils.

The climate of the area is extremely continental with dry summers and rather cold, little-snow and windy winters characteristic of extra-tropical deserts. Over a year, three basic types of air masses penetrate into the depression: arctic, polar and tropical.

The average annual air temperature ranges between 6.9 and 8.8°C with an absolute maximum of +42°C and an absolute minimum of -46°C.

The average annual relative air humidity is 58% (peaking in November-March at 71-85 %) in Zhetysu (Dzhungarian) Gate and 63% (77-81%) near Usharal.

18. Hydrological values:

Describe the functions and values of the wetland in groundwater recharge, flood control, sediment trapping, shoreline stabilization, etc.

Natural peculiarities and the geological structure of the Alakol hollow are quite favorable for formation of underground waters. The main area of underground basin water recharge is mountainous areas of Zhetysu (Dzhungarian) Alatau, Tarbagatai, Barlyk-Maili and their bajadas (alluvial cones of rivers and water currents). The main discharge area is the hollows of Alakol lakes. Loose water-permeable Quaternary and Neogene-Quaternary sediments covering the Alakol hollow and going as deep as over 1000 m (according to geophysical survey) in the central part of the hollow accumulate significant volumes of underground waters.

Due to infiltration of precipitations fracture waters occur in mountainous areas, most of all in the areas of tectonic fractures. These waters moving down the slope partially pinch out in river valleys while partially leaving for the Alakol hollow. The underground drain layer is 100-200 mm.

In the area of foothill plains underground waters form a continuous free-surface underground stream (in the upper part of the foothill area) with a significant slope towards the central part of the hollow. Waters lie as deep as 3 to 10 m in the bottom parts of alluvial cones and 40-100 m at their tops. The aggregate aquifer varies from 26 to 100 m in thickness. Filtration ratios are 20-150 m/day, the runoff depth is 160-180 mm.

Within the limits of sandy masses underground waters form a free-surface aquifer with a slight slope towards large lakes or local drains in the area of hummock-ridge plains. Water-containing rocks are clay sands. Waters lie as deep as 2 to 10 m (50-60 m under positive landforms). The average penetrated aquifer thickness is 45-70 m. Filtration ratios are 0.7-15.0 m/day, the runoff depth is 3-10 mm.

In the area of flat lake-alluvial plains, underground waters form a single aquifer with a slope of 0.002 kilometers towards lake hollows. Waters lie as deep as 1.5 to 11m, more frequently about 4-5 meters deep. The least water depth is confined to river valleys and the coastal part of the lakes. The aquifer is 5-10m thick. Underground waters of this area recharge from precipitations, river and local drains and inflows from the areas of sloping plains and hilly sands.

The configuration of shorelines of the main wetland reservoirs, the Alakol and Sasykkol Lakes, changes depending on the filling level of the lakes. At a minimum level, the shoreline is more leveled, at a maximum level it is heavily indented with many gulfs, peninsulas and small coastal islands.

19. Wetland Types

a) presence:

Circle or underline the applicable codes for the wetland types of the Ramsar "Classification System for Wetland Type" present in the Ramsar site. Descriptions of each wetland type code are provided in Annex I of the *Explanatory Notes & Guidelines*.

Marine/coastal: A • B • C • D • E • F • G • H • I • J • K • Zk(a)

Inland: L • M • N • O • P • Q • R • Sp • Ss • Tp • Ts • U •
Va • Vt • W • Xf • Xp • Y • Zg • Zk(b)

Human-made: 1 • 2 • 3 • 4 • 5 • 6 • 7 • 8 • 9 • Zk(c)

b) dominance:

List the wetland types identified in a) above in order of their dominance (by area) in the Ramsar site, starting with the wetland type with the largest area.

Q, O, M, L, Tp

20. General ecological features:

Provide further description, as appropriate, of the main habitats, vegetation types, plant and animal communities present in the Ramsar site, and the ecosystem services of the site and the benefits derived from them.

According to the soil-vegetation criterion one can distinguish 56 types of habitats united into 3 large groups (natural surface, surface anthropogenically transformed and aquatic habitats). Great variety and mosaic arrangement also explain rich fauna occupying various types of habitats and numbering over 2000 invertebrate species including 24 rare ones and over 400 species of vertebrates including 38 rare, endemic and protected species.

The area in question has a broad representation of five vegetation types: desert, meadow, swamp, forest, submerged aquatic and shrubs. Desert vegetation is represented by artemisia, perennial halophytic, ephedrarum, saxaul and *Nitraria retusa* associations. The meadow vegetation type is represented mainly by true, marshy and halophytic meadows. Grassy bogs are confined to river channels, cutoff lakes and depressions. Submerged aquatic vegetation is the main component of littoral complexes of Alakol intermontane hollow. The wetlands record a total of 710 higher plants of 362 geni and 88 families, including 44 rare, 8 relic and 12 endemic species.

Endemic species – Kolpakowski's Tulip (*Tulipa kolpakowskiana*), Tulipa brachystemon (Tulip) (*Tulipa brachystemon*), Sievers's Apple-tree (*Malis sieversii*), Papaver tenellum (Poppy) (*Papaver tenellum*), Birdbill milk vetch (*Astragalus ornithorhynchus*).

Rare, protected species included into the Red Book of Kazakhstan – Kolpakowski's Tulip (*Tulipa kolpakowskiana*), Tulipa brachystemon (Tulip) (*Tulipa brachystemon*), Sievers's Apple-tree (*Malis eseverisii*), Papaver tenellum (Poppy) (*Papaver tenellum*), Birdbill milk vetch (*Astragalus ornithorhynchus*)

Relic species: Sievers's Apple-tree (*Malis eseverisii*), Papaver tenellum (Poppy) (*Papaver tenellum*), Nitraria shoeberi (*Nitraria shoeberi*), Floating Moss (*Salvinia natans*), Asiatic Poplar (*Populusdivesifolia*), White Water Lily (*Nymphaea candida*), Yellow Pond Lily (*Nuphar lutea*), Trichanthermis karatavensis (*Trichanthermis karatavensis*), Ujaly milk vetch (*Astragalus ujalensis*), Albescent milk vetch (*Astragalus albicans*), Phlomidis iliensis (*Phlomidis iliensis*), Micricephala subglobasa (*Micricephala subglobasa*).

Significance of ecosystems in supporting the wetland biodiversity

There are 58 types of water and land ecosystems identified in the wetlands following the soil and botanic principle. The comprehensive evaluation of their significance demonstrated that, at least, 25% of the wetlands are covered by highly significant ecosystems and, at least, 40% by ecosystems of medium significance. The functions they perform are important for landscape stabilization, water protection and biotic resources.

21. Noteworthy flora:

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in 14, Justification for the application of the Criteria) indicating, e.g., which species/communities are unique, rare, endangered or biogeographically important, etc. *Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the RIS*
Flora is mainly composed of angiospermous plants (704 species, or 91.9%), of which 76.8% are dicotyledonous and only 22.3% (159 species) are monocotyledonous.

Among rare plants included into the Red Book of Kazakhstan are *Tulipa kolpakowskiana*, *Tulipa brachystemon*, *Malus sieversii*, *Papaver tenellum*, *Astragalus ornithorhynchus*.

Among relic plants are *Nitraria schoberi* (relict of subtropical woods and savannas) and *Salvinia natans* (water flora relict) are of tertiary age, but are not rare for this region, as well as Asiatic poplar (*Populus diversifolia*), white water lily (*Nymphaea candida*), yellow water lily (*Nuphar lutea*) and *Trichanthermis karataviensis*.

The endemic group includes astragals (*Astragalus brachypus*, *A. cognatus*, *A. karakugensis*), Semenov's sea lavender (*Limonium semenovii*), *Salsola dschungarica*, *Zygophyllum macropodium*, *Paraeremostachys dschungarica*, *Poa cynosuroides*, *Artemisia saissanica*, *Turaniphytum eranthemum*, Altay tulip and Albert's skullcap.

A large group of wetland plants serves as a raw material for various economic goals: there are 312 medicinal, 304 fodder, 135 food, 147 melliferous and 61 poisonous species.

22. Noteworthy fauna:

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in 12. Justification for the application of the Criteria) indicating, e.g., which species/communities are unique, rare, endangered or biogeographically important, etc., including count data. *Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the RIS.*

Fish. The wetland ichthyofauna includes 17 species of 6 families. Prior to the acclimatization efforts local (native) ichthyofauna was represented by 9 species of 3 families - Eurasian minnow (*Phoxinus phoxinus*), Balkhash Marinka (*Schizothorax argentatus*), scaleless osman (*Gymnodyptichus dubonskii*) Tibetan stone loach (*Tryplopis stoliczkaei*), grey stone loach (*Tryplopis dorsalis*), spotted stone loach (*Tryplopis strauchii*) plain stone loach (*Nemacheilus barbatulus*), Severtsov's loach (*Nemacheilus severzovi*) and Balkhash perch (*Percu brenkii*), and spotted stone loach (*Tryplopis strauchii*) being most numerous.

Amphibians and reptiles. Two amphibian species and 24 reptile species were found to dwell in Alakol hollow with 2 and 14 of them living on the wetland territory

Amphibians: Marsh frog - *Rana ridibunda*, Danatin toad – *Bufo danatensis*

Reptilians: Kaspischer Even-fingered Gecko (*Alsophilax pipiens*), Toad Head Agama (*Phrynocephalus versicolor*), Secret Toad Head Agama (*Phrynocephalus mystaceus*), Steppe Runner (*Eremias arguta*), Rapid Racerunner (*Eremias velox*), Sand lizard (*Laerta agilis*), Tartar Sand-Boa (*Eryx tataricus*), Grass Snake

(*Natrix natrix*), Water Snake (*Natrix tessellata*) Dione Ratsnake (*Elaphe diene*), Spotted Whip Snake (*Coluber ravergieri*), Eastern Stripe-Bellied Sand Snake (*Psammodphis lineolatum*), Meadow Viper (*Vipera ursine*) Central Asian Pitviper (*Agkistrodon halys*).

Birds. The avifauna of the flat part of Alakol hollow consists of 342 species, of which 203 are nesting. There are 121 wetland birds dwelling within the limits of the borders of the wetland. Among them, there are 50 mass and numerous species, which can be hunted, about 15 piscivorous species having a big impact on fish resources and also about 40 species having a high ecological value as components of various hydroecosystems.

Mammals: There is a total of 55 mammal species on the territory of the wetlands. Among them are 4 insectivorous, 3 chiropter, 10 predatory, 3 artiodactyl, 23 rodent and 1 Lagomorpha species. Depending on the nature of their stay all mammals dwelling on the specified territory can be divided into 2 groups: 21 resident species and 23 migrating species (or those making local migrations). Representatives of resident groups include, first of all, rodents and insectivorous, while representatives of chiropter, Lagomorpha, predatory and artiodactyl groups seasonally migrate at different distances. Quantity-wise, a majority of mammals living here belong to ordinary or numerous species (predatory, rodents), however, there are also rare, specially protected species included into the Red Book of Kazakhstan, for example, marbled polecat (*Vormela peregusna*), Central Asian otter (*Lutra lutra seistanica*), manul cat (*Felis manul*), Turkestani lynx (*Lynx lynx isabellinus*), Persian gazelle (*Gazella subgutturosa subgutturosa*), Selevin's mouse (*Selevinia betpakdalensis*). One of species occupying Alakol hollow, namely great jerboa (*Allactaga sibirica*), while 15 are resource species including 10 species (wolf (*Canis lupus*), fox (*Vulpes vulpes*), ermine (*Mustela erminea*), steppe polecat (*Mustela eversmanni*), badger (*Meles meles*), wild boar (*Sus scrofa*), Siberian roe deer (*Capreolus pygargus*), muskrat (*Ondatra zibethicus*), tolai hare (*Lepus tolai*)), which are of importance as game animals.

23. Social and cultural values:

a) Describe if the site has any general social and/or cultural values e.g., fisheries production, forestry, religious importance, archaeological sites, social relations with the wetland, etc. Distinguish between historical/archaeological/religious significance and current socio-economic values:

The Alakol, Sasykkol and Koshkarkol Lakes are of a great fishery value. The Alakol Lake is of an important social value as a summer resting place.

b) Is the site considered of international importance for holding, in addition to relevant ecological values,

examples of significant cultural values, whether material or non-material, linked to its origin, conservation

and/or ecological functioning?

If Yes, tick the box and describe this importance under one or more of the following categories:

- i) sites which provide a model of wetland wise use, demonstrating the application of traditional knowledge and methods of management and use that maintain the ecological character of the wetland: expected in coming years
- ii) sites which have exceptional cultural traditions or records of former civilizations that have influenced the ecological character of the wetland:
- iii) sites where the ecological character of the wetland depends on the interaction with local communities or indigenous peoples:
- iv) sites where relevant non-material values such as sacred sites are present and their existence is strongly linked with the maintenance of the ecological character of the wetland:

24. Land tenure/ownership:

a) within the Ramsar site: State

b) in the surrounding area: Mixed – state land reserve, territories for long term leasing, given to individuals and legal entities and private land plots.

25. Current land (including water) use:

a) within the Ramsar site:

Navigation, fishing, ranging, haymaking, towns, waterworks, highway transportation facilities, communications

b) in the surroundings/catchment:

pastures, cultivated lands, forest cover, populated centers, recreational zones, motorways and railways, oil pipeline.

26. Factors (past, present or potential) adversely affecting the site's ecological character, including changes in land (including water) use and development projects:

Anthropogenic factors: intensive fishery and small-size vessel traffic in the territories adjoining to the wetlands. Recreational load in summer, increased car and water-borne traffic intensity in recreational zones.

Rapid development of various livelihoods in Almaty and East Kazakhstan Oblasts, increasing population, appearance of new settlements and industrial facilities. Withdrawal of water from the rivers feeding the wetlands, including from the boundary waterways in China. Construction of new lines, including the pipeline from Central Asia to China and construction of new roads.

Below are human interventions that are negative and cause wetland ecosystem dysfunctions:

- Unsustainable use of biological resources, including illegal hunting and fishing.
- Increasing recreational burden on littoral ecosystems due to rapid development of beach tourism.
- Inadequately controlled water withdrawal from the rivers feeding the wetlands
- Cattle grazing in the surroundings of lakes and rivers
- Fires

Major barriers and threats to the wetland fauna:

- Inadequately controlled used of biological resources, illegal hunting and fishing
 - Inadequately controlled water withdrawal from the rivers feeding the wetlands
 - Increasing recreational burden on littoral ecosystems due to rapid development of summer tourism
 - Farming
 - Fires
-

27. Conservation measures taken:

a) List national and/or international category and legal status of protected areas, including boundary relationships with the Ramsar site:

In particular, if the site is partly or wholly a World Heritage Site and/or a UNESCO Biosphere Reserve, please give the names of the site under these designations.

b) If appropriate, list the IUCN (1994) protected areas category/ies which apply to the site (tick the box or boxes as appropriate):

Ia ; Ib ; II ; III ; IV ; V ; VI

c) Does an officially approved management plan exist; and is it being implemented?:

The Management Plan for the site has been developed and is planned for implementation.

d) Describe any other current management practices:

There is Alakol State Nature Reserve (highest protected area category) on the territory of the wetlands.

28. Conservation measures proposed but not yet implemented:

e.g. management plan in preparation; official proposal as a legally protected area, etc.

In the future it is planned to create a biospheric reserve on the territory, which also covers the wetlands of international significance.

29. Current scientific research and facilities:

e.g., details of current research projects, including biodiversity monitoring; existence of a field research station, etc.

Integrated hydrological, botanical and zoological research was performed in 2004-2006 on the territory of the wetlands seeking to assess the current status of ecosystems, flora and fauna. Based on their findings a scientific study has been developed in order to expand the area of Alakol Reserve. The Program of Ongoing Monitoring of Quality of Habitats, Flora and Fauna Components has been developed and is being implemented.

Stock of commercial fish species and optimum catch quotas are annually assessed for sustainable fishery purposes.

30. Current communications, education and public awareness (CEPA) activities related to or benefiting the site:

e.g. visitors' centre, observation hides and nature trails, information booklets, facilities for school visits, etc.

A viewing tower is currently under construction and a special platform is being equipped on the territory of Alakol Reserve. Construction of a visit-center will start in the nearest future. The headquarters of the reserve host a Museum of Nature and the Tree Nursery.

Staff of Alakol Reserve and local NGOs issue, on a regular basis, booklets and information leaflets about the value of the wetlands, globally endangered species dwelling there and about the need to protect them. Lectures and open lessons on nature protection subjects are conducted in local schools on a regular basis.

31. Current recreation and tourism:

State if the wetland is used for recreation/tourism; indicate type(s) and their frequency/intensity.

Over 20 tourist facilities run on the east and southern coasts of the Alakol Lake can receive as many as 3-5 thousand people at a time, primarily during the summer period (beach tourism). There is an all-the-year-round 'Barlyk-Arasan' sanatorium operating in Kabanbay Village. Services related to summer holidays and bathing are also provided by numerous "guest houses" owned by local residents. As a whole, at least 10 thousand tourists visit the shores of the Alakol Lake during a summer tourist season.

32. Jurisdiction:

Include territorial, e.g. state/region, and functional/sectoral, e.g. Dept of Agriculture/Dept. of Environment, etc.

Almost all lands are under the government jurisdiction and are run through Akimats of Alakol and Urdzhar Raions of Almaty and East Kazakhstan Oblasts.

A large part of lands is leased out on a long-term basis for agricultural product manufacturing purposes. Lands of the existing PA are managed by the Forestry and Hunting Committee of the MoA.

33. Management authority:

Provide the name and address of the local office(s) of the agency (ies) or organisation(s) directly responsible for managing the wetland.

Akimat of Alakol Rayon of Almaty Oblast
Akim – Karasayev Bagdad Abilmazhinovich
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34. Bibliographical references:

Scientific/technical references only. If biogeographic regionalisation scheme applied (see 15 above), list full reference citation for the scheme.

1. Atlas of Natural Conditions and Resources in the Kazakh SSR, Moscow, 1982
2. Climate Reference Book of USSR. Parts 1-5. 1955.
3. Udvardy M.D-F. A classification of the biogeographical provinces of the world. IUCN, 1975. 18. 49 p.

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